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FARMERS AND ORGANIZED LABOR*

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A NEW era of collective action is emerging. Ushered in by the violence of wars and revolutions, it promises to engulf the whole social world. At some time, no doubt, sufficient adjustments will have been made so that collectivism will be as much at home in the social order as individualism was before 1910. Today we are in the turbulent and shifting interim. Among the great issues of the day are the place in collective action of organized labor, the independent farmer, and farmer organizations, the role of political parties and relations between government and the economy.

Within this broad field of social action, this essay selects the problems of farmers and organized labor for special attention. The primary purpose is to investigate the common problems and the basis of conflict between the two groups. To do this it is necessary to review briefly the historical positions in the economy of both agriculture and labor.[1]

I

Farmers and urban laborers in this country hold many things in common. They are all citizens benefited in the large by an economy which offers employment opportunities and by a political and social order which provides security of expectations. Yet within these larger common benefits there are countless subsidiary problems upon which their interests conflict. Each group has struggled for security, equality, and opportunity. Both have used their citizen-

* This paper was prepared for the Thirty-Third Annual Meeting of the American Farm Economic Association which was scheduled to be held December 29–31 at Cleveland, Ohio.

[1] I wish to acknowledge the debt which I have to my graduate teachers for their social analyses of and the countless suggestions on these problems, especially Professors Hibbard, Commons, Perlman, Witte, and Wehrwein.

ship as resources in their struggles; yet the conditions under which their campaigns have been conducted have differed greatly.

Going back a century in this country, farmers had long since achieved the rights to own the land and its products. They were then engaged in the long campaign to make the public domain a virtual gift to settlers. Having achieved this, with the help of city laborers, their great task since has been to give their rights to use the land some substantial content. Farmers have fought land sharks, railroads, monopolies, wall street finance, market manipulators and middlemen. The organizations, alliances, and campaigns have changed, but the aim has been consistently the same, to give their achieved economic rights the dimensions of tolerable opportunities. A question now troubling the minds of the farmer leadership is whether they should in turn take on organized labor for a finish fight.

Farming is predominantly a small scale family enterprise. Here are combined in one person or family the functions of proprietor, laborer, and capitalist, although family resources are frequently supplemented in the latter two functions. Two important implications follow: (1) the farmer is a proprietor owning the output of the plant, reaping the gains in efficiency and carrying the risks of business; (2) it is primarily as capitalist, not as laborer, that farmers have sought the help of collective action. This comes about quite simply. The farmer, as proprietor, receives a labor return only after his financial obligations have been met. The necessity of meeting property taxes and debt payments makes farmers property conscious, especially in hard times.

Urban workers by contrast are employees without significant property rights in the businesses which hire them. The employer not only owns the plant; but also, at common law, he owns the job. Labor seeks to get some control over, or ownership in, the job. The security of expectations which farm operators enjoy depends in large part upon the established property rights in land and the privileges of disposing of their products. Urban labor is seeking the economic equivalent of what farmers have achieved already in the right to own land. These basic rights of farmers can be enjoyed and exploited by individuals; but laborers can achieve rights in their jobs and maintain control over them only by collective action.

Here is the root of the conflict between labor on one side and capital or property on the other. Large scale urban industry has devel-

oped in this country within a system of private property and enterprise which has given the owners of the business the rights to the returns from improvements in scale, organization, and operations. Attempts on the part of the workers to improve their own status has involved relative reductions in the employer's rights in the business.

The scale of industrial operations, possible only with mass employment, has created something new; it has created economic power with possibilities of use on a scale completely absent in a simpler economy. On the employer's side, economic power roots in the sheer size and financial strength of the enterprise. Here is the power to withhold jobs from workers, output from consumers, even dividends from stockholders, on a scale great enough for a few companies to materially affect the welfare and financial stability of the whole economy. While the acquisition of power by large scale industry has been facilitated by the privileges of incorporation granted by the state, this power is not fundamentally of political origin; it inheres in the organization, size, and accumulations of the enterprises.

Confronted with this strength of the employers, laborers have developed the instruments for using the economic power which accrues to their position in large scale industry. By virtue of their numbers and the need for their willing participation in industry, organized labor has used the strike, boycott, and union shop to attain its objectives. Industry has countered with other powerful economic weapons, the lock-out, and black-list—for example. There is a long history of adjudication regarding the permissible limits of use of these and other forms of economic power. The important point here is that this kind of power is peculiar to large scale collective industry.

Such economic power does not accrue to farmers in our economy. This is due to their independence which roots in the fact that the uses of their farms are their job opportunities. Farmers have more economic liberty as individuals than laborers; yet, collectively, they have less economic power because of this same fact. There are no essential farmers, in the sense that strategically placed skilled urban workers are essential, where the concerted action of a relatively small proportion of the workers may tie up many plants. From this I conclude that whereas labor unions may expand their own opportunities without extensive political action, farmers cannot.

The political activities of farmers and laborers have had one basic similarity; neither has consistently aspired to form a separate polit-

ical party. Other countries have labor or agrarian parties. We have "class conscious" social movements—to use Professor Perlman's phrase. This appears to stem from two basic social arrangements. Our political system evidently requires a two party contest where the basic issues are fought out within each party rather than between parties. Secondly, the practice of judicial review of legislation, virtually requires that reforms be established point by point on the basis of specific issues; the will of the legislature is not supreme.

Successful political action by farmers and laborers securing governmental assistance to further their aims has changed the relation of government to the economy; this is due in large part to the historical accident that corporate business has been given a relatively free hand. Business enterprise in cities enjoying the privileges of capital accumulation under private enterprise need only the most general authorizations and assistance in order to exploit the advantages of position—a tariff to shut out competition, general statuatory privileges of incorporation, the enforcement of contracts and so on. But with farmers and laborers it is different.

Urban laborers were benefited, especially, by the laws restricting immigration. But most of their achievements have required specific modifications in the practices of businesses employing them. The pattern of these gains and the major adjustments were attained through the exercise of union bargaining power; but legislative sanction and support of the practices required the creation of administrative agencies.

Farmers have been able to advance their own interests very little, lately, by either their own economic power or general laws, such as tariffs. Virtually, all of the major gains which support their roles of independent producers have required the direct and supporting action of a government agency.

This is the general experience in our economy. Governmental reforms, in any interest, require the creation of agencies which have the authority to participate directly in economic affairs. The "action agencies," which have multiplied so profusely in the New Deal Era, are evidently the way that the government in America must be modified to cope with the economic problems of the age.[2] They signify a

[2] John R. Commons, Institutional Economics, Macmillan Co., 1934, pp. 840–873. Legal Foundations of Capitalism. Macmillan Co., 1924, pp. 354–356. Marshall E. Dinrock, The Role of Discretion in Modern Administration, Gaus, White & Dinrock, The Frontiers of Public Administration, University of Chicago Press, 1936. Chapter IV.

shift away from nearly exclusive reliance upon general rules of procedure to extensive attention to the substance of economic activity.

The Department of Agriculture is charged with the administration of an array of action agencies in agriculture. These programs make it impossible for it to be wholly a farmer's department.[3] Activities which determine prices, levels of production, move people about, furnish food for school children and the poor, inescapably involve much more than merely the farmers' interests. This assertion may seem an extreme one to leaders of farm organizations, for example, who have lately complained that the Department of Agriculture was representing "consumers" and not farmers. But if administrative programs cannot be run solely in the interests of farmers, still less can they run according to the dictates of farm organizations.

The experience of the Department of Labor is instructive on this point.[4] The Department has always been known as organized labor's spokesman. Furthermore, all secretaries, except Madame Perkins, have carried union cards. Secretary Perkins has sponsored many great social programs, the social security act among them. Yet with few exceptions, the administration of these programs has been placed outside the Department. The civil war in the labor movement and the unpopularity (mostly undeserved) of the Secretary are minor reasons for this. Evidently, Congress, employers, and the public generally, do not trust the Department of Labor to administer programs involving conflicts between labor, capital, and the public, even though much of the work of the Department is surely a service to the whole public. In consequence, the Department of Labor is the smallest department in the federal government. There is little reason to believe that a Department of Agriculture dominated by farmer organizations devoted to their own interests would fare any better. If a government department acts for one interest group only, it cannot administer action programs fairly; if it administers action programs reasonably it cannot be the exclusive spokesman or agent for one interest.

To summarize the comparisons, it seems, therefore, that the differences between the programs of farmers and laborers root in at-

[3] See Gaus & Walcott, Public Administration and the U. S. Department of Agriculture, Public Administration Service, Chicago, 1940, especially p. 282 & ff.

[4] I am indebted here to Mrs. Hilda Kessler Gilbert for an illuminating analysis of the recent history of the Department of Labor—in her doctoral dissertation, The Department of Labor in the New Deal Period. Wisconsin, 1942.

tempts to gain essentially similar ends. Both seek security and equality. Farmers are entrepreneurs assuming business risks; their programs, therefore, support the value of property and the solvency of their businesses. Laborers are attempting to achieve a similar degree of security in their job opportunities. The struggles of labor today are no more radical or revolutionary than were the peasants' battles of old and the farmers' long struggle to achieve the right to own land in fee simple; but labor's battle differs primarily in that it is fighting in a world where property is economic power. Stabilization of rights, duties, and expectations is much more difficult, however, where the objects to which they refer are job opportunities or a unity of collective action rather than land or commodities as in the earlier history of farmers.

II

Similarity of problems does not mean harmony of interests; but it does suggest that the conflicts between farmers and organized labor can be tempered greatly by mutual understanding.[5] Farmers' interests conflict with labor's at every turn; at the level of the farm business, in farmer cooperatives, in the administration of public programs, and in the struggle to use political power. All these, however, are but specific instances of the universal rule that interests conflict; the great over-all task of social organization is to provide ways of canalizing and mitigating conflicts so that order and mutual benefits may be achieved continuously.

From the point of view of the individual farmer, and especially in the current war program, the first and foremost difficulty with labor comes in the rate of wages. Farmers complain that they cannot match city wages with high hourly wages in factories and overtime pay for more than forty hours per week. In this they are no doubt correct; but when they go on to blame the restrictive policies of labor unions for this they are not seeing the whole picture.

The fundamental problem here is that farmers are in competition with urban industry for labor; the basic conflict is with industry, not labor. Furthermore, labor is the major resource which agriculture and urban industry use in common; it is therefore the point at which competition is registered. To be sure, some of the terms

[5] I have elsewhere attempted to make a general interpretation of the social conflicts in which farmers are implicated: Social Conflicts and Agricultural Programs. JOURNAL OF FARM ECONOMICS, August 1941, Vol. XXIII, No. 4.

upon which urban labor is employed are "union-made." Yet the basic fact is that wages are a share in the gross income of urban industry which now has a market as limitless as the demands of war and the appropriations of Congress. Also, the present stresses merely bring into bold relief long standing differences in wage paying ability. Farmers never have been able to meet industrial competition for labor. It has not been many years since farmers were up in arms over the urban subsistence rates of pay of the federal emergency work programs from Civil Works Administration to Works Progress Administration.

Farmers in this country are caught between two worlds; the traditional family enterprise of farming in a world of biology and the dollar economy in an industrial world based upon scientific control of physical processess. The farmer attempting to hire labor, therefore, is squeezed between the alternatives for labor offered by urban industry, land markets dominated by the farm family enterprises, and intense competition in produce markets.

There can be no simple solution to this problem. It is surely not enough merely to assert that city wage rates should be reduced drastically. City wage rates are the result of long time adjustments to costs of living and urban industrial requirements and business incomes. Furthermore, the farmer's relative position in the economy is not bad now. The greatest difficulties are due to the absolute shortage of manpower and goods; not unfavorable price ratios.

It is true, of course, thinking of normal times, that farmers' dollars would go farther if they could buy the same manufactured products for less money. There is no assurance, however, that merely lower urban wages would mean lower prices for the manufactured articles which farmers buy. In some cases it would, in others not. Basically this is a matter of industrial price policy which is not the subject of this paper. It is important, though, that farmers and their spokesmen do not blame organized labor for all the difficulties of the whole system of production and distribution. Furthermore, specific prices are, at best, superficial facts regarding economic organization; and this paper is directed toward problems of structure and organization rather than price equilibration. The strategically important elements in the pricing process are the principles or rules by which negotiations are stabilized, such as the principle of a willing seller and a willing buyer, or that of equality of bargaining power. To the extent that we are not prepared to ration

everything and set every price, we must depend upon the play of market bargaining, under general rules, to give us fair prices. The great deficiency in the free play of the market, from a structural viewpoint, is the existence of private economic power; but even this in the long run can be partially overcome by the creation of substitutes. Labor has some economic power but it is not exempt from the competition of substitutes—as city milk delivery-men are finding out and as the building trades are destined to experience in an age of pre-fabricated housing. Indeed, the policies in the building trades are partly responsible for the prospects of pre-fabrication to reduce building costs.

Yet organized labor undoubtedly fits much better than farmers into the industrial urban world simply because it is one of the cities' products. Labor unions bargain over the share of the gross income of a concern or industry which they shall receive. The bargaining comes to a focus at the level of the firm. The outside limit to wages is obviously the income of the concern above other necessary costs, all within the demand for the product. The talking points of unions, therefore, are the rates of corporation profits or the amounts going to officers as salaries and bonuses. It is the solvency of the firm or industry, and not the price of the output that is of immediate interest to union bargainers, although they cannot escape the consequences of product pricing. The essential point here is that urban labor finds itself in direct conflict with employers not farmers.

To the extent that farming is operated on a large scale with hired labor, farmers face the threat of the unionization of their workers much like city employers. This is virtually inevitable unless laborers are denied citizenship. Professor Paul S. Taylor's studies of labor problems in Californian agriculture reveal the nature of farm labor conflicts in an industrialized agriculture.

Yet there is a second and indirect way in which the ideas and standards of organized labor may come to agriculture—through the extension of wages and hours standards to agriculture. These programs represent the application of minimum labor standards by political power and legislation, rather than by the exercise of economic power through concerted action by labor. Yet the goals are essentially the same as those of labor union policy. There are many signs that this sort of farm labor security legislation is on the way. Many European countries have long had such legislation. If the

present war continues many years, the pressure to use the rural manpower more efficiently may compel the transfer of workers from marginal land areas to work on the better lands. This will usually, one may suppose, involve a shift from operator to laborer. The "farm" security of the poor land areas will be lost; it would be logical to replace it by a "job" security, such as urban workers have under the social security law. Publicly directed movements of farm workers already under way require the employers to guarantee certain minimum standards of employment.

There is every reason to believe that any attempt either to unionize farm workers or to extend social security privileges to them will be fought bitterly. The California experience in agriculture, for example, is reminiscent of early attempts to organize city laborers. We may expect to see the banner of the family farm wrapped around all kinds of farms in this impending fight. Yet it would undoubtedly add to the relative advantage of genuine family farms if the more commercialized kinds of farm organization were made to meet stiffer labor requirements.

These struggles, present and prospective, do not present a pretty picture. Yet sight should not be lost of the fact that the contest has deeper roots in what we sometimes call social forces. The fundamental problem is security in an unstable industrial world. As the farmers are caught up more and more in this urban scheme of things, they must expect to share the disabilities as well as the privileges. Undoubtedly, the farmers have gained greatly by being a part of an industrialized society—at least in terms of the materials of life.

Farmers' cooperatives present a special case of farmer-labor relations. This is due largely to the ambiguous nature of farmer membership in them. For decades farmers have been encouraged and assisted to form producer cooperatives; they have flourished especially in the marketing field. The leading idea has been that if farmers could do a better job collectively, of marketing their products, for example, then they should go in and displace the middleman. Having done this they now find themselves confronted with the same conflicts with labor unions as private processors, similarly situated in the economy.

This situation holds the possibility of turning much of the strength of the farmer cooperative movement against organized labor. Certainly, some of the large cooperatives handling farm

products are too large to be ignored if labor unions set out to organize the trade, although unions might pass over cooperatives as a matter of tactics. But if organization is attempted, farmer cooperatives must either claim exemption on some special grounds or face the issues in union recognition. At the present time, unionization of cooperatives is confined mostly to the larger plants.[6]

If exemption from unionization is claimed on grounds of special conditions, much can be said for limitations on the right to strike where perishable food products are ready for handling. This is one of the many cases where the nature of agricultural production presents special difficulties to a direct transplanting of procedures established in urban industry; it is a problem which a union program should meet. However, union leaders can scarcely be expected to honor as a right any claim that cooperatives be exempted from organization because the owners are a group of farmers. When farmers join in a cooperative endeavor to process their products, they take on the social role of processors even though it may not seem so to the farmers. The failure to see this is illustrated by the plea which a cooperative creamery manager made when he warned that farmers must either resist the encroachments of unionization in their cooperative "or surrender all right the farmer has in running his own marketing plants."[7] Yet, farmers can scarcely claim the privilege to displace middlemen without assuming the liabilities which middlemen suffer. Ultimately, the farm cooperatives, like other urban employees, will have to decide whether labor unions are constructive social organizations, deserving to be recognized and dealt with; or whether they are a social menace. Insofar as farmer cooperatives are engaged in interstate commerce, the federal law now assures the workers the right to organize. This may account for the fact that the leaders of the two great overhead organizations of farmers' producer cooperatives have joined the Farm Bureau in its campaign against the present legislative national labor standards.

Two incidents occurred in Wisconsin a few years ago which evoked protests from farmers that indicate the explosive possibil-

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[6] For comments on unionization of dairy plants see: Froker, Colebank, and Hoffman, Large Scale Organization in the Dairy Industry, U.S.D.A. Circular No. 527, July 1939, pp. 47–48.

[7] B. L. Bower, manager of the Richland Creamery and President of the Wisconsin Dairy Industries Cooperative, quoted in the Dairy Record, Minneapolis, Minnesota, May 25, 1938, p. 16.

ities of union entry in agriculture. The shutdown of a canning factory for a few crucial weeks in 1938 caused the loss of a spinach crop; a strike called by an American Federation of Labor affiiliate at the cannery was at least a part of the reason for the shutdown, although the situation is confused by other circumstances. Within the same year the Teamsters' Union of the American Federation of Labor attempted to organize the workers in a cooperative creamery. Farmer members vigorously opposed them even to the point of helping to organize a "Buttermaker's Association" in the attempt to stop unionization of dairy plants. The cooperative lost out in its efforts to resist unionization when the National Labor Board took jurisdiction, held the "Buttermaker's Association" to be a company union, and forced the creamery to rehire the dismissed American Federation of Labor union members. As a consequence to these conflicts, the Wisconsin Council of Agriculture—composed of most of the farm organizations in Wisconsin—campaigned successfully to limit organized labor's rights to picket and strike, insofar as these are regulated by state law.[8] This affair aroused strong feelings and antagonisms. As a result of the fight, the state organization of the Farmers' Union withdrew from the Council. There was also talk of retaliation by organized labor through a campaign to restrict some of the privileges and immunities of cooperatives;[9] such a threat was never carried out.

Labor unions have found, and I predict will long continue to find, that the organization of farmers' cooperative marketing and purchasing associations presents different organizational problems than the usual businesses in the same field. In the first place, the farmer owners do not have a purely financial interest in the business; to most participants, cooperation is not a business only, it is more. Equally important, the farmers are not dependent upon the income from their cooperatives in their same way as the usual employers. Cooperatives are supported in order to improve the farmer's income, derived fundamentally from farming operations. Also, most farmers do not have much income when measured in terms of dollars. H. E. Babcock reported, for example, that the average annual wage per worker in the cooperatively owned Grange

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[8] Wisconsin, Session Law, 1939, Chapter III.

[9] See Milwaukee Journal, April 21, 1939, and Dairy Record, May 11 and 25, 1938. I am indebted to a student, Norval Dworak, for research assistance on this point.

League Federation's Buffalo mill in 1941 was $1,954.00.[10] He mentions three counties scattered over New York State where average farmer labor earnings were less than half as much. It is difficult for farmers to see why employees in a processing plant should have wages as high or higher than their own net incomes.

Surely too, the union representatives must have found psychology among farmer-cooperators far different than they encounter in negotiations with city employers. Real farmers are not bargainers; they usually have a dislike for higgling and haggling. In this they reflect the adjustment to their market transactions where they pay and receive the "going-price." Consequently, if union representatives approach farmer-cooperators with strong talk and demands intended to be only the extremes from which to bargain, farmers are likely to lapse into a stubborn silence, as was reported to be the case in the Richland Center incident.

Generally speaking, organized labor evidently has avoided fights with farmer legislative programs as a matter of policy. Labor's real battles have been with capital; furthermore, labor's political margin is narrow and they need farmer support. If the labor press is critical of farmer demands, it usually distinguishes between farmers and their leaders. The latter are taken to have designs of their own, not attributable to "dirt" farmers.[11]

But the reverse is not true. Although leaders of many farm organizations distrust labor leaders, their attacks are aimed at labor practices widely supported by the rank and file of organized labor, the 40 hour week, for example. The American Farm Bureau Federation in its recent national convention bitterly criticized the 40 hour week, especially the provision for overtime pay beyond this base period.[12] The spokesman of the National Cooperative Milk Producers Federation also assailed the 40 hour week. Since the real issue here is not the length of work week but the rate of pay and legislative support of union labor standards, it is a frontal attack upon unionism. The National Farmers' Union alone among

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[10] In his excellent discussion of the union experience at the Grange League Federation's Buffalo Feed mill. Country Gentleman, March 1942, Vol. CXII. No. 3, p. 13.

[11] See, for example, the C.I.O. News, October 10 and November 23, 1942; the C.I.O. News, Wisconsin Edition, November 23, 1942.

[12] See the Chicago Daily News, State Edition, December 7 to December 12, 1942.

the national farmer movements is now actively supporting organized labor on the political front.[13]

In action programs, the interests of farmers and laborers meet in ways differing both from the market place or politics. It is the essential function of administrative agencies to resolve differences between contending interests by investigations and by rulings that have the force of law. Whether farmers or laborers are directly involved, except as members of the general public, depends on the agency and the problem. However, some of the action programs promoted in the interest of each group have directly involved the other. The Agricultural Adjustment Act requires a minimum wage for beet workers. Currently the government in sponsoring the importation of Mexican workers has accepted a minimum wage payment of at least 30 cents an hour. Federal Milk Market administrators, working under the authority granted the Department of Agriculture, are inescapably faced with the farmer, labor, and consumer interests in the price and proceeds of milk. From the labor side, there is the prospect of the extension of labor standards and social security benefits to hired farm workers.

Where interests meet and conflict in the political arena, the politicians are the specialists in compromise.[14] This arrangement permits interest spokesmen great liberty in speeches. Farm leaders may extol the virtues of farmers and rail at labor; and labor leaders may damn the capitalists without qualifications, for it is the politicians who make the compromises and "take the heat." But it is not so where interests must work together within the same administrative agency; there representatives of interests must make the compromises. We should expect, therefore, that farm leaders in the Agricultural Adjustment Agency would be more tolerant of other interest groups than those in the general farm organizations.

Yet it may be that the very extension of the use of administrative agencies will intensify the political conflicts between agriculture and labor. We now have minimum labor standards guaranteed by Federal law. This would seem to reduce the need for union membership and throw more of labor's efforts into politics. Furthermore,

[13] An attempt is currently under way to organize a "New Liberal Front" uniting organized farmers, laborers, and "middle class progressives" into one organization under the leadership of Senator Norris, New Republic, January 11, 1943, p. 39.

[14] See T. V. Smith, Compromise, "Its Context and Limits." *Ethics*, Vol. LIII, No. 1, October, 1942, p. 13.

the action programs for agriculture are beyond the direct control of the general farm organizations. To an even greater degree than with labor unions, the present farm organizations will probably be "outside" the action programs; it can scarcely be otherwise with an administered program which embraces farms as whole operating concerns. From this I conclude that the future of general farm organizations is likely to be principally in political lobbying for their constituent members, perhaps sponsoring cooperative associations in addition. The recent speeches of the conservative farm leadership indicates that they intend to concentrate on reducing labor's privileges.

In this there is an ominous note. We face the possibility that the political power of farmers may be turned against organized labor for a finish fight. Once monopoly, capital, and the middlemen were the objects of attack; now it is the 40 hour week, time and a half pay for overtime, and so on. There is a significant passage in Babcock's discussion of the strike at the large feed mill of the Grange League Federation. He counsels organized farmers to formulate a program for dealing with organized labor; and also makes several suggestions for a reasonable common ground, but he observes: "Labor today is on the march, at times interfering with farming—at times appearing to jeopardize this country's safety. When capital in its day of force and intrigue was on the march, farmers let themselves be pushed just so far and then took counter offensive action which secured for them their place at the nation's council table. With labor on the march, farmers must employ similar tactics to meet and deal with labor's force and intrigue, lest they once again be pushed from their place."[15] The implication is clear that the fight once was with capital but now is with labor. Also, it is likely that Babcock spoke the mind of the majority of farm leaders.

For this there are many reasons, no doubt. The utter inability of farmers to hire labor due to the limitless demands for war production is one. Back of it too are many tragic mistakes, including the civil war in labor's ranks and some irresponsible labor leadership. The relative prosperity of the farmers is undoubtedly a factor; also, their cooperative organizations are now large enough to count as large scale businesses in their own fields. Finally, there is the

[15] Supra: Country Gentleman. March 1942, p. 38.

circumstance that leaders must seek something which their constituents would not get otherwise or they have no justification for their own positions. But whatever the reasons and the antecedents, the outcome can be that the influence of organized agriculture is thrown in with the corporations fighting labor organizations, at a time when the concentration of industry is growing at a rate probably greater than ever before in our history. This may lead to a great resurgence of blind reactionism.

Yet the case is not lost, though it can be, for persons who believe that thought and deliberate social action can make for a better life. The good sense of the common people can be counted on to help check irresponsible leadership; social scientists too can help. The core of the problem for social thought is that greater attention must be turned to the sifting out of social practices that can be used to help direct conflicts to tolerable conciliations. And these practices must be judged not by their effectiveness in promoting efficiency alone, but also other values such as security and equality, which are essential to civilized living.

III

It is therefore an occasion for earnest thought and not despair. We are in the midst of the struggles for the creation of a collective democracy, adequate for the problems of a power age. In this both trade unions and farm organizations have their place. It is to the ultimate interest of each that the other should develop. Each has its own problems and shortcomings which mutual understanding can help overcome.

I do not doubt that many farmers, as well as their leaders, are alarmed at what they consider to be irresponsible acts of organized labor. Nor do I doubt that there has been irresponsibility; it could scarcely have been otherwise. The recognition that the New Deal gave to labor's rights of organization were long overdue. But this award in conjunction with the tempo of the past decade has created an environment which gave great latitude to leaders who chose to exploit the occasion. To them this has been an opportunity to exercise power. Yet, the racketeering and irresponsibility of labor leaders is confined to a small minority which union membership would also like to keep in hand.

The same circumstances have also given collective action by farmers great support. It seems to me that the leaders of the Amer-

ican Farm Bureau Federation and their satellites are now having their chance day of power. They are in the opposition to a government preoccupied with the war. Smarting under the accusation that higher farm prices would lead to inflation and defeated in their effort to gear ceilings to 110% of parity, they appear to have come to the conclusion that labor is in the saddle in Washington. Also they dislike much that the Department of Agriculture is doing, especially the Farm Security program. Consequently, they appear to have decided to "take on" the present administration in a fight over the New Deal reform measures. They may succeed in joining coalitions that will force repeal of some of the "security" programs. But the measure of their current success may also be the means of their ultimate undoing.

The war effort is supporting the economy now; but it will not always. The better situated farmers are doing so well that the Master of the National Grange could recently ask indignantly, "Is agriculture in America to be independent or are we forever to go with hat in hand to the Federal Treasury and accept all the regulations and dictation that go with subsidies?"[16] Now the market demand would "pay off" if only the ceilings were raised. But will not the American people again turn to government at the close of this war much as they have during the past decade, if their economic security is threatened? Furthermore, are not the prospects for surplus production of farm products within a few years after the close of the war so great that farmers will again likely be clamoring for supporting measures? When that day comes farmers may find that city voters have concluded that farm "relief" is a poor investment of public funds.

The interests of farmers and organized labor are not in complete harmony and cannot be. Frank recognition of this fact should be the foundation of the concessions and compromises that each must make to achieve mutually advantageous social action. If labor leaders realize that the great majority of farmers have low cash incomes and carry the risks of business in a highly competitive and naturally hazardous enterprise, both their tactics and their demands may be tempered. Farmers, in turn, should realize that urban workers are attempting to achieve security and avoid job enslavement to a corporate feudalism. Let it also be recognized

[16] Speech before the 1942 convention of the American Farm Bureau Federation, quoted in Chicago Daily News, State Edition, December 10, 1942.

that the recent gains of neither organized farmers nor union laborers are really secure. During most of our history, collective action by labor has been carried out in a hostile environment; recognition by the present administration provides no guarantee for the future. Farmers are in a relatively strong position now; but again only the New Deal, among recent administrations, has recognized and utilized the political power of farmers for their own advancement. On the long view, however, both the relative numbers and political strength of farmers seem destined to decline as our economy becomes more urbanized. It is likely, too, that organized labor will turn more to political action in future decades, following out the logic of its own development. The future of combined political action of agriculture and labor hinges upon the quality of statesmanship within each group and their success in agreeing upon specific objectives of common gain within a large field of fundamental conflicts.

BRITAIN'S WARTIME FOOD POLICY

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THE control and organization of food supplies is one of the most vital of all wartime efforts. A smooth flow of provisions must reach the consumer 365 days in the year. There is no scope for serious breakdowns in this flow although considerable reductions in normal scales of consumption can be borne temporarily. But the maintenance of the morale of the people at high levels is dependent in a large degree on the adequacy and quality of the food.

The national arrangements for food are under a constant limelight of criticism, for every individual is a consumer. Probably no two people agree exactly on what constitutes the perfect wartime food policy and, accordingly, it speaks very well for our experience, so far, that few major faults have to be found with the general organization of food supplies to the consumer under conditions of war. It would, however, appear to be a salutary experience to analyze the general principles on which the food supplies are maintained and selected with a view to heightening the appreciation of this national problem.

In the main, the responsibility for food has been in the hands of the two Ministries of Agriculture and Food. The producer in this country also deals with the Ministry of Supply which controls some of his requirements, e.g. building materials, and also some of his raw materials for industry, such as wool. The Ministry of Labour and National Service also has the power of withdrawing or reserving the man power of the industry. The Ministry of Food has become the sole purchaser for some commodities and exercises price control over practically all products. The home food production campaign has been the concern of the Ministry of Agriculture. On the whole, insofar as it is possible to compare their rather different functions, it might be said that the work of the Ministry of Agriculture has been easier to perform than that of the Ministry of Food, because its work has been largely one of persuasion and advice to producers. Its local representatives in the County War Agricultural Executive Committees are largely made up of farmers, estate agents, auctioneers, and others with an intimate knowledge of the farming prob-

lems in their particular areas. The persuasion has undoubtedly been made easier by the farmers' knowledge that the Committees have very wide powers which they do not hesitate to use in appropriate circumstances. The Ministry of Food, on the other hand, comes into touch with everyone, and its role of applying restrictions and controls is bound to be unpopular and made difficult from time to time. Naturally, the Ministry of Food was concerned with imported as well as home-grown food and it has among its functions the responsibility for food imports, the efficiency of distribution, rationing, and the interests of the consuming public.

TABLE 1. FOOD SUBSIDIES

Food items	Amount
	(£ Millions)
Flour, bread, oatmeal and animal feeding stuffs	40
Meat	23
Potatoes	20
Sugar	13
Milk	2
National milk scheme, etc.	18
Eggs	11
Tea	3
Milk products, bacon and ham, carrots and other items	7
Total	137

In carrying out its functions the Ministry of Food has a very positive duty to perform in arranging the nutritional adequacy of the country's diet, both quantitatively and qualitatively. It has also taken steps, through subsidies on an increasing scale, to see that people with low incomes are able to buy sufficient quantities of staple foods. This is a recognition that rationing alone does not ensure the consumption of the full rations unless the price comes within the range of the ability to pay for them. The subsidies represent, of course, a most important key factor in the nation's policy of retarding inflation through their steadying influence on the cost of living. The scale of these subsidies can be gathered from a recent announcement of the Ministry of Food that from January 1 to March 31, 1942, the cost of food subsidies—on imported as well as on home produced foods—was at the rate of £127 millions per annum, after allowing for £10 millions profits realized on certain commodities. (Table 1)

As pre-war Britain only produced enough food from her own soil for about 45–50 per cent by value of her own requirements, and also imported 20 per cent of the feeding stuffs consumed, it is obvious that her food policy is also to a large extent a shipping policy. As a limited supply of ships means a bottleneck in transport of overseas produce, the imports of wartime have to be restricted to essentials and home food and feeding stuffs production was stimulated with this aspect of saving shipping space for transport of the raw and finished materials of war as well as of food.

Table 2. Domestic food rationing

Food items	Date of introduction of rationing	Amount of weekly ration	
		At date of introduction	At Dec. 1, 1942
Bacon and ham (uncooked)	January 8, 1940	4 oz.	4 oz.
Sugar	January 8, 1940	8 oz.	8 oz.
Butter	January 8, 1940	4 oz.	2 oz.
Butter and margarine[1]	July 22, 1940	6 oz.	6 oz.
Cooking fats	July 22, 1940	2 oz.	2 oz.
Tea	July 9, 1940	2 oz.	2 oz.
Meat (retail value)[2]	March 11, 1940	22*d*	12*d*
Cheese	May 5, 1941		
Ordinary class		1 oz.	8 oz.
Special class		8 oz.	16 oz.
Preserves[3]	June 9, 1941	4 oz.	4 oz.
Sweets and chocolate	July 27, 1942	2 oz.	3 oz.

[1] On July 22, 1940, a combined butter and margarine ration was introduced. At date of introduction, not more than 4 oz. to be taken in butter; at December 1, 1942, not more than 2 oz. to be taken in butter.

[2] (a) Pork and offal were included in ration on January 6, 1941, and offal was excluded again from ration on June 9, 1941. (b) Children under 5 get half rations only for meat.

[3] Jam, marmalade, syrup and treacle. Mince meat was included in preserves group on October 20, 1941.

In order to achieve strict economy of total food supplies, it was obvious that all luxury foods would be cut out and that rationing would be introduced to ensure equitable distribution and reduce total consumption either with a view to building up stocks or to saving shipping space, and generally to enable as much as possible of the nation's resources, human and material, to be given over to other essential war needs. Perhaps, paradoxically, the main criticism of the rationing has not been because of its imposition so much as because it has been applied "too little and too late." Thus, by failing to build up stores, it was feared that when cuts were made

they would be much more drastic than if a milder form of rationing had been applied in the beginning. In this connection, it is of interest to note that Germany applied a strict rationing system from the first day of the war.

TABLE 3. BRITISH POINTS RATIONING SYSTEM FOR FOOD[1]

Food items	Points
Biscuits	(per lb.)
Plain	1
Sweet	2
Chocolate	4
Dried fruits	16
Prunes	4
Syrup	8
Canned salmon	
Grade 1	32
Grade 2	32
Grade 3	16
Tinned herrings (tomato)	12
Tinned pilchards (tomato)	12
Tinned pilchards (salt and water)	8
Rice, sago, etc.	4
Cereal	4
Tinned milk (sweetened)	8
Tinned tomatoes	
Medium size	6
Large size	9
Prepared meals	8
Luncheon meat	30
Canned meat	32
Stewed steak	24
Meat rolls	2
Galantine	2
Tinned beans in tomato sauce	4
Tinned beans in brine	1

[1] The above list is not complete and is merely intended to illustrate the type of commodity covered by the points system.

An examination, however, of the changes in the Domestic Food Rationing since its inception, so far, does not bear out this fear that there would be a subsequent scaling down of individual items (Table 2). The information shows that the first instalment of rationing was not imposed until about four months after hostilities had been opened, but with the exception of the meat ration it is noticed that the levels of rationing originally imposed have been maintained or even increased—a fact which speaks well of the Ministry's organization in the difficult supply situation of the war. Indeed, for most foods, increases were made on the original scales of rationing and these were subsequently reduced to the old or similar levels.

Towards the end of 1941 the "points" system of rationing certain foodstuffs were introduced, thus adding a certain amount of flexibility to rationing, as it enabled the points to be weighted directly to meet changes in the volume of supplies. At the same time, it enabled the consumer to exercise his freedom of choice. In December, 1942 (under this points system) each consumer was allowed 20 points per month which he could spend on various food items at point values listed in Table 3.

In Britain a few foods like bread and vegetables still remain outside the rationing control, but now in the winter of 1942–43 steps have been taken to ensure equitable distribution of winter vegetables. In comparing Britain's system of food rationing with that of other countries, it is worth remembering that, whereas differential rationing is only applied to a very limited amount, there is a very liberal canteen provision in urban and industrial centers, no coupons are required for canteen or restaurant meals, and that, although milk is issued in the first place to certain priority classes of consumers, whole milk is available for all.

If less reliance has to be placed on imported supplies, a correspondingly greater reliance must be placed on the share supplied by the British farmer. But to increase agricultural production takes time, as staple crops are produced annually, and expansion of livestock takes several months or even years. Accordingly, the recent statement of the Minister of Agriculture that we are producing about 70 per cent by weight of our total food requirements is a most notable measure of the success of the campaign to increase home production.

In its report for 1937 the Food Defence Plan Department (which developed into the war-time Ministry of Food) estimated Britain's consumption of important foods. These estimates provide a guide to the main needs of the war if due allowance is made for changes in the population and for changes in diet (Table 4).

Naturally enough, wartime needs meant that a full peacetime diet could not be secured and it was essential to ensure that food was dietetically balanced as well as sufficient in quantity. This meant wide changes in the systems of farming, and in some more than others. An analysis of the main principles on which production was stimulated to satisfy the national requirements can be made on some such lines as the following:

1. Price control
2. Guidance and orders of War Agricultural Executive committees
3. Extension of arable area
4. Improvement of fertility
5. The relative value of individual crops for the production of energy and other dietary requirements
6. The relative efficiency of farm animals in the conversion of feeding stuffs into human food
7. Rationing of concentrated feeding stuffs for livestock
8. Control and reservation of labor supplies
9. Control of fertilizers and other requirements

TABLE 4. BRITISH FOOD SUPPLY (AVERAGE OF 1934–36)

Food items	Total consumption	Home production	
		Amount	% of Total consumption
(Quantities in thousand tons, except where stated)			
Cereals[1]	4,418	575	13
Meat	3,086	1,529	50
Fish	974	861	88
Milk, fresh, mill. gal.	918	918	100
Milk, condensed, etc.	259	169	65
Fats[2]	943	107	11
Cheese	199	62	31
Eggs in shell, millions	7,182	4,668	65
Fruit	2,380	601[3]	25[3]
Potatoes	4,576	4,395[3]	96[3]
Sugar (refined)	1,935	506	26
Tea, coffee, cocoa	283	—	—
Feeding stuffs[4]			
Cereal	9,796	3,232	33
Oil cakes	1,848	78	4

[1] In terms of flour.
[2] Butter, margarine, lard.
[3] Including an allowance for allotments and gardens.
[4] Excluding feeding stuffs entirely home grown, such as hay, roots, etc.
Source: The Economist, June 10, 1939, p. 589.

The priorities which have been given to individual foods help to indicate the relative importance of some of these principles which, it should be noted, overlap or are otherwise complementary to each other. The ultimate decision about what individual food products are needed and how they are best stimulated depends on a number of factors which do not lend themselves to definite or clear-cut statistical measurement.

Milk, on dietetic grounds, would seem to have first priority because it is the most natural and self-sufficient food of all. During a war when diets in any case tend to be deficient in one constituent or another, it is of greater importance than ever. For children and nursing mothers it is an essential food—a fact which is recognized in the priorities given to those two classes of consumer. Moreover, on most criteria, milk represents the greatest efficiency in the conversion of concentrates into human foodstuffs. The question of efficiency of conversion as a factor in national food policy raises certain difficulties:

"The efficiency with which animals convert feeding stuffs into food may be expressed either as 'partial efficiency,' i.e. the efficiency with which they convert the production ration, or as 'total efficiency,' i.e. the efficiency with which they convert the ration as a whole. The latter has more practical interest than the former, since it takes into account differences in maintenance requirements. Nor is it always possible to separate maintenance from production rations. Where such a separation has been possible, i.e. for milk and egg production, it has been made in the analysis. . . .

"In order to make a satisfactory comparison between feed consumption and yield of human food, both should be expressed in the same unit or in units which make the values comparable or have some special significance. Units of fresh weight offer an unsatisfactory basis since both rations and products differ widely in their water content. Weight of dry matter may be used as first rough basis but is also unsatisfactory because rations and products of similar dry matter content may differ greatly in nutritive value. Comparisons on the basis of energy and protein supply would be of much greater significance."[1]

Clearly then a livestock policy will not be determined solely on the basis of efficient conversion of animal feeding stuffs. The policy will, also, have to consider what is available and how far animals can utilize by-products or waste products.

On most measurement, the order of efficiency of conversion by the main classes of farm animal is (1) the milk cow, (2) the pig, (3) the hen, and (4) beef cattle and sheep about equal, and on most counts the cattle and sheep efficiency is appreciably less than that of the milk cow.

In wartime, however, cattle and sheep numbers, as producers of meat, can be maintained on the ground that they make use of the by-products, mainly bulky fodder crops such as straw, beet tops

[1] I. Leitch and W. Golden. The Efficiency of Farm Animals in the Conversion of Feedingstuffs to Food for Man, Technical Communication No. 14, Imperial Bureau of Animal Nutrition, p. 9.

and roots, which are not entirely suitable for milk production on their own. The maintenance of these classes, too, can be justified by the fact that they fit into two specialist systems of farming in Britain, e.g. where winter feeding is practiced on arable farms to maintain fertility, and in the rearing systems neither of which may be very well adapted for milk production. On the strict measure of conversion, the hen compares unfavorably with the pig on the weight performance, but dietetically eggs probably play a more important part than bacon, notably in the transition from a purely milk diet to a more solid diet, and generally in balancing some of the factors which are likely to be lacking in other foods. While bacon may be more easily imported than eggs in shell this does not apply, however, to dried eggs. The chief difficulty about maintaining the numbers of poultry and pigs is that they compete directly for potential human foodstuffs such as cereals, and because beef cattle and sheep are uneconomical converters of concentrates, it is not surprising that the rationing scheme for concentrates has dealt drastically with these four classes of livestock.

It seems clear, at any rate, that the livestock policy is considerably influenced by the fact that it requires several pounds of concentrated animal feeding stuffs to produce one pound of human food, both expressed on a dry matter basis. This fact indicates why it is so uneconomical of shipping space to import animal feeding stuffs rather than finished human foods, although it has to be remembered that some feeding stuffs are by-products of other essential imports, e.g. oil seeds and cereals. It is fully realized that livestock play an important role in the maintenance of fertility, and it is for this reason—to prevent a decline in the yield of arable crops—that some farmers are encouraged to retain as many non-dairy livestock as possible. But to an even greater extent, livestock numbers are kept up to utilize the waste products or by-products of the arable farming, e.g. straw and sugar beet tops, where these livestock do not compete with the dairy stock. A factor limiting the number of livestock which can be carried is the reduced area of pasture, especially summer pasture, resulting from the ploughing up campaign, but more stock under the arable systems can be carried on farms in the winter time and thus cattle and sheep fattening in winter can be fitted into many arable systems without creating severe competition with dairy cows for the available home-grown foods.

How to maintain milk production in winter time remains the

crucial problem of the nation and the dairy farmer. Even in peacetime the supply of milk in mid-winter was little in excess of the liquid milk demand. For several reasons, under war conditions there has been a very large increase in the consumption of milk, and at the same time the difficulty of maintaining output has become greater through the scarcity of purchased concentrates. A positive feature of the animal rationing scheme is that concentrates are issued to correspond with the farmer's ability to produce by normally fixing amounts of rations on yields of previous months.

It is generally maintained that on an average one acre of arable land feeds more human beings or animals than one acre of average grassland, while one acre of average wheat saves at least as much shipping space as seven acres of the best grass in England. To put it another way, it has been pointed out that an acre of pasture produces meat for one person, while an acre of land under the plough produces enough wheat for 21 people or potatoes for 42.

The relative importance of the different crops in meeting the food energy requirements of the country can be measured in calories. On an acreage basis it has been calculated that sugar beets and potatoes are the highest producers of energy, each producing more than twice the amount of calories, about 5,000,000 and 4,000,000, respectively, from the average yield of wheat or oats. The ability of certain crops to produce food energy is a part explanation of the priorities which are given to them in the cropping programme of the ploughing up campaign supervised by the County War Agricultural Executive Committees. There are other factors which influence the choice of crops. For example, when labor remains a bottleneck in production it is worth noting that there is a greater output of food energy *per man* in the production of wheat than for potatoes or sugar beets, and, furthermore, the ratio of protein per man is greater from wheat than potatoes or sugar beets. Moreover, bread made from wheat is an important part of the customary diet of the population.

The average adult male requires about 3,300 calories per day, while a child under four years may only require little more than a third of this amount. Man cannot live by bread alone, neither can he live on potatoes or sugar beets alone—the three items which produce the most food energy per acre—because such a diet would not provide sufficient of some of the important food factors such as fats and proteins. It has been suggested that of the total intake

of food energy, some 60 per cent should be obtained as carbohydrates, but 25 per cent from fat, and about 15 per cent protein. Accessory food factors, such as vitamins and minerals, are also an essential of good nutrition, and these are usually ensured by the consumption of a variety of fresh foods.

One practical way of meeting the varying demands of individuals for food energy—a variation due to type of work, sex and age—is to provide some form of differential rationing or to extend the system of "points" rationing which gives flexibility to the consumer's choice. Differential rationing has already been applied, for instance,

TABLE 5. FOOD RATIONS IN GERMANY[1]

	Bread	Meat	Fats
	(Rations of normal consumer = 100)		
Children			
0 to 3 years	49	57.1	66
3 to 6 years	53		91.3
6 to 10 years	75.5	114	129.2[2]
Youths—10 to 20 years	115.5		143[3]
Normal consumers	100	100	100
Night workers and workers on very long shifts	126.5	157	110
Heavy workers	162	200	148.6
Heaviest workers	207	271	279

[1] Children up to 6 years receive the same meat ration, and children and youths from the ages of 6 to 18 years also receive a uniform meat ration. For bread, the age of the normal consumer is put at over 20 years, and for meat and fats at over 18 years.

[2] For children from 6 to 14 years.

[3] For youths from 14 to 18 years.

Source: The Economist, October 31, 1942, p. 552.

to agricultural workers and miners for cheese rations, and to children, invalids and mothers for certain classes of food. But it is understood that in Germany the system has been arranged for more categories of workers, and differentiation has been applied to bread, meats, fats and milk. These rations are based on the amounts given to the "normal consumer" (who represents 40 per cent of the German population) who receives, as a maximum when available, 79.4 ounces of bread, 12.3 ounces of meat, and 7.3 ounces of fat per week. The range in amount is from about 50 per cent for the youngest class of children, to nearly 300 per cent for the heaviest worker class of consumer for non-milk foods (Table 5).

The fairly large number of classes, made larger by the special priorities granted to certain consumers for milk, suggests that it is

administratively feasible to arrange for an efficient system of differential rationing. The Economist note suggests that if bread were to be rationed in Britain, it would be necessary to adopt this method of differentiation.

In addition to those factors which have been called in to stimulate Britain's home food production, probably price control has been the most powerful and flexible of all. This price control at present ensures more or less guaranteed prices for the main farm products, and the Government has made it known that the system will prevail for the duration of hostilities and for at least one year after.

From the individual farmer's point of view, the criterion of success which he applies to his farm is the amount of profit earned. One might expect, therefore, that it would be a simple matter to adjust prices to ensure production of the most essential foods, but there are various difficulties to be overcome before a farming system can respond to a current stimulus. The farmer has to overcome the inertia of switching over to an entirely new system. It has already been shown that to reach maximum food production the arable area has had to be increased. At the beginning of the war a large proportion of farms in this country had no land under the plough at all. Their only crop was hay, and their livestock was fed on purchased concentrates, mainly imported from overseas. Thus any change was bound to be frought with such difficulties as obtaining the essential machinery and materials used in arable farming, and also of finding the extra labor. Even where farmers were willing to pull their weight in producing the maximum amount of food from their land, the unsuitability of the soil and their lack of experience of arable systems made them chary of attempting new and unfamiliar practices. Even with a price incentive present, it was realized that agricultural programmes are essentially long-term and that the price guarantees would have to have some quality of permanence—a fact which, as already noted, has been recognized in the Government's promise of prices in the immediate post-war period. Farmers, remembering that their prices were not long maintained at war-time levels after the last war, pressed the Government for some degree of security. It is because of these actual and potential difficulties that reliance, in part, has to be made on the exhortation and powers of the County War Agricultural Executive Committees. To a very large extent farmers have been willingly persuaded to in-

crease the arable acreage of their farms, but frequently the War Agricultural Executive Committees have had reason to use their powers—and their powers are very wide. These powers are obtained under the Defence Regulations and are delegated to the War Agricultural Executive Committees under the Cultivation of Lands Order. Though these powers, the War Agricultural Executive Committees can requisition or take possession of land if it is not being farmed according to the rules of good husbandry, give ploughing-up orders, and directions about general and particular aspects of management and the use of land. Since the start of the war, just over 2,000 tenancies have been terminated, covering 200,000 acres, and the Committees have taken possession of 100,000 acres of land which was derelict or badly neglected. As a leader in the Times[2] pointed out, this does not represent a large proportion of the 25,000,000 acres of farming land in England and Wales, the explanation being that it is by practical, reinforced if necessary by legal, direction, and not by wholesale evictions, that the nation has obtained the large increase in food output obtained in the 1942 harvest. It may be worth noting that in each of the 62 counties in England and Wales there is a War Agricultural Executive Committee, the work being further decentralized through 478 district committees, representing a total force of over 5,000 leading farmers. The work of these farmers is voluntary and unpaid, but the Committees have local paid staffs, and while the Times' leader states there are still too few qualified technical men in agriculture, the benefit of their advice and directions are evident in the more intensive methods of production which are now widely adopted. For instance, it is argued that much more could be done to raise yields of crops and milk by demonstrating the methods employed by the best farmers, and this is a task to which the Committees are now devoting their energies. In a diversified industry with so many different types of farms and farmers, the team spirit is needed through the whole organization. It was felt that the centralized methods of control from London, which applied to certain other Government departments, would not have been suitable for agriculture even under war conditions.

The War Agricultural Executive Committees have also been in a position to help in increasing the food production by urging farmers

[2] December 4, 1942.

to use the various forms of direct assistance, or by themselves supplying various goods and services. The cost of some of these services is repayable with interest within a certain agreed time, and various services can be arranged by contract. Grants have been provided for the ploughing-up of seven-year old turfs, and usually for 50 per cent of the total cost of liming, draining, water supplies and bracken cutting. To give an example, in two and a half years there have been 58,000 schemes for ditching on 2,000 acres undertaken at a cost of something like £1 per acre.

Another important factor of the war-time policy is that a very large proportion of men engaged in agriculture have been reserved from Military Service. Nevertheless, a large number of men have left agriculture for the fighting services, and it has been necessary to find more hands to deal with the increased food output of farms, and in this connection the War Agricultural Executive Committees have arranged for the supply of all sorts of substitute and extra labour. The Women's Land Army has played a significant part, while soldiers, school children and Italian prisoners have done certain seasonal work, such as harvesting, and have helped to meet the demand for extra hands. The shortage of manpower, however, remains one of the biggest obstacles to greater output from farms —even though British agriculture in three years has become the most highly mechanized in the world—so that the need to see that all labor and all raw materials are used as efficiently as possible is obviously one of the foremost principles of Britain's war food effort.

DIMINISHING RETURNS IN FEEDING COMMERCIAL DAIRY HERDS[1]

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DURING the course of cost-of-milk-production studies among West Virginia dairy herds it became apparent that the solution of a major management problem depended on the nature of the relationship between feed input and milk output among the cows in those herds. Herds tended to be of a size to give full employment to an existing labor supply. More cows were kept than could be fed at standard rates from the home grown supply of feed, and varying amounts of feed, chiefly concentrates, were purchased to supplement that supply. It seemed imperative that some method should be developed to aid producers in determining the most profitable rate of feeding—the rate at which the value of an increase in the yield of milk would just equal the cost of the required increase in the amount of the ration.

Of course, the relationship between feed input and milk yield has a more widely applicable importance than merely determining the total input of feed to be allowed a herd containing a predetermined number of cows. It may determine the number of cows to be fed from a predetermined feed supply; in a national emergency it may determine the possible increase of milk supply from the national herd; and in the long run at the margins of milk producing areas, it is the final factor determining whether or not milk shall be produced at all. The elements of these problems were illustrated by Tolley, Black and Ezekiel,[2] using hypothetical data, in 1924.

Previous Feed Input: Milk Yield Studies

Thaer, Grouven, Wolff, Lehman, Kellner, Haecker and Armsby are names that symbolize nutritional research into quantitative relationships in milk production back to 1810. Today's feeding standards, summarizing the century's work, "state the amounts of total digestible nutrients (or of net energy) that should be supplied in addition to the maintenance requirement, for each pound of

[1] Published with the approval of the Director of the West Virginia Agricultural Experiment Station as Scientific Paper Number 297.

[2] Input as Related to Output in Farm Organization and Cost of Production Studies. H. R. Tolley, J. D. Black, and M. J. B. Ezekiel. U. S. Dept. Agr. Bul. 1277. 1924.

milk of the various fat percentages."[3] While there is general agreement that, "Where maximum production is desired . . . somewhat greater amounts must be supplied,"[4] the standards do not attempt to show the increase in milk yield that might be expected from an addition to the present feed supply of a given cow.

Farm management studies of dairy feeding practice have described such practices for a wide variety of farming conditions. They have failed, however, to disclose a general relationship between nutrient input and milk yield appropriate for choosing most profitable rates of feeding.

A pioneer work that surmounts some of the fundamental defects vitiating previous research is the recent report on input-output experiments conducted by the United States Department of Agriculture and ten cooperating State experiment stations.[5]

The U.S.D.A.-State input-output studies consisted of feeding sizeable groups of cows at selected rates of feed input for the duration of one or more lactations. In one series of studies, the Haecker or Morrison feeding standards were the reference points relative to which the selected rates of total digestible nutrient input were chosen. In another series of studies unrestricted roughage allowances were supplemented with grain in predetermined ratios to milk yield. Each level of feeding was applied to a group of cows selected to match all other groups with respect to breed, productivity, percentage of butterfat in milk, age and weight. The full range of feeding rates was tested at nine stations.

The experimental procedure provided for close control of feeding and accurate measurement of milk output and of quantities of all feeds consumed. Only a very small part of the nutrient intake was obtained from pasture. Otherwise, the experimental conditions were characteristic of herd management in state agricultural experiment stations. The quantities of the various feeds were adjusted every week according to the plan of the experiment so that any change in production during any one week was reflected in the rations computed for the following week. The nutrient constituent being varied was feed energy. Rations were selected to contain adequate protein, minerals and vitamins.

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[3] F. B. Morrison. Feeds and Feeding. XX Edition. F. B. Morrison Company. Ithaca. 1936, p. 495.

[4] Ibid.

[5] Einar Jensen, et al. Input-Output Relationships in Milk Production. U. S. Dept. Agr. Tech. Bul. 815. May, 1942.

The results of the studies are reported in detailed tabulations of group averages, and in graphs showing both the actual group averages and curves fitted mathematically to the group averages. Individual cow data are not given, though they are promised for a later publication. The experiments indicated the relationship between total digestible nutrient inputs and milk yields shown in Table 1.

TABLE 1. SMOOTHED DATA FROM 6 FEEDING LEVELS AT 9 STATIONS AND 2 FEEDING LEVELS AT 2 STATIONS, PREPARED FOR THE PURPOSE OF ESTIMATING THE MOST PROFITABLE RATE AT WHICH TO FEED GRAIN

Level of feeding from lowest to highest	Live weight	Adjusted total digestible nutrients	Estimated quantities of milk these feeds would produce
	lbs.	lbs.	lbs.
1	1,080	5,102	6,438
2	1,090	5,376	7,020
3	1,100	5,642	7,517
4	1,110	5,901	7,947
5	1,120	6,154	8,317
6	1,130	6,400	8,639
7	1,140	6,638	8,915
8	1,150	6,868	9,156
9	1,160	7,091	9,366
10	1,170	7,307	9,550
11	1,180	7,514	9,708
12	1,190	7,713	9,847
13	1,200	7,905	9,971

Source: Jensen, op. cit. Table 27, page 80.

It was found that the average yield was about three pounds of milk per pound of total digestible nutrients consumed above maintenance. This is in substantial agreement with feeding standards. One-pound increases in total digestible nutrient consumption were accompanied by 1.7 pound increases in yield at the lowest level of feeding, and by 0.6 pound increases at the highest level.

Cows of low and high inherent producing ability were found to give about the same increase in yield for a one-pound increase in feed when the initial feed levels were at the same percentage of feeding standard requirements.

The principal effects of different rates of feeding on the cows themselves was on body weight and "condition." Heavy and light fed cows responded alike in health and breeding efficiency, though cases of "off-feed" occurred more often at higher levels. Cows which would weigh about 1,100 pounds at the standard rate of

feeding averaged about 1,200 pounds when feed consumption was 38 per cent above the standard.

One of the significant conclusions of the U.S.D.A.-State studies was that "the input-output relations determined, if applied on a national scale, show that large additional quantities of feed grains can be converted into milk with only a small loss in efficiency" (page 87). That is, it is indicated that the rate of marginal yield changes relatively little over a considerable range of total yield. In this connection, it is important that the mathematical expression of these input-output relations was of the form: $Y=A(1-R^x)$. This is the equation for Y (output) approaching A (a maximum) as X (input) approaches infinity. It was reported that none of several curves applied to the data gave an appreciably better fit than did this curve. There are, however, some reasons for expecting this relationship to be better represented by another shape of curve.

It is reasonable to think that cases of "off-feed"—and other management defects and physiological limitations—might be so accentuated by higher rates of feeding that total yield might actually decline as nutrient input was increased beyond some point. Also, the refusal and waste of feed would be a factor in the economy of different rates of feeding, even though the precaution of weighing back uneaten feed may be necessary for determining physiological efficiency. On the basis of these considerations the selection of a curve of another shape is defensible; the shape to reflect the attainment of a maximum yield at some level of feeding beyond which a decline of total yield may be expected. The complete analysis would define feed input as feed consumption plus necessary feed waste.

The U.S.D.A.-State input-output relations were determined from the feed consumption over maintenance. The quantities of nutrients required to maintain the body weight of the cows were calculated according to the Haecker standard and subtracted from the total nutrients consumed. Inasmuch as maintenance "requirements" are indeterminate within an appreciable range[6] it would seem advisable to reinvestigate maintenance requirements concurrently with production requirements. The acts of assuming a maintenance requirement and of adopting an equation which forces the total output curve to intersect the X axis at that point may

[6] C. A. Cary. Utilization of Feed Energy and Feed Protein in Milk Secretion. U.S.D.A. Yearbook, 1939, pp. 649–667.

appreciably influence the slope of the total output curve and the related incremental outputs.

A reexamination of the data from the U.S.D.A.-State study would probably provide answers to some of those questions. Results of the West Virginia study reported in this paper suggest the direction in which modifications may be expected. In the meantime it can be said of the U.S.D.A.-State study that the problems of input-output relations in milk production have been well analyzed. A high quality of experimental control inspires confidence in the data. The major implications of the results for the productive organization of farms and agricultural regions are well presented.

The Study of West Virginia Herds

The West Virginia data were obtained by methods very similar to those followed in dairy herd improvement association work using bi-monthly test periods. At intervals of two months one day was spent in each herd, weighing each cow's milk at two milkings, sampling and testing to determine butterfat production, and weighing all or representative portions of the feed fed. The body weight of each cow was estimated once each year. The daily records were extended to become estimates of the year's production and feed input. Over-all records of milk disposal and of feed production, purchases and utilization for each farm provided a check on the general accuracy of the individual estimates. Table 2 describes the distributions of the records.

Milk and butterfat yield data were converted to the commonly-used equivalent "four per cent fat-corrected milk" according to the formula: $FCM = .4M + 15F$.[7] This is a convenient way of reducing quantities of milks of differing specific energy contents to quantities of milk of a common specific energy content. Feed inputs, likewise, were converted to the energy equivalent unit "total digestible nutrients." These were computed from average analyses of feed stuffs reported by Morrison.[8] The amount of nutrients obtained from pasture was estimated for each herd by computing nutrient requirements for the pasture season according to the Morrison standard, and subtracting the quantity of nutrients supplied by supplemental feeding during the pasture season.

[7] W. L. Gaines. The Energy Basis of Measuring Milk Yield in Dairy Cows. Ill. Agr. Expt. Sta. Bul. 308. May, 1928.

[8] F. B. Morrison. Feeds and Feeding. XX Edition. F. B. Morrison Company. Ithaca. 1936.

TABLE 2. DISTRIBUTIONS OF RECORDS OF MILK YIELD, FEED INPUT AND BODY WEIGHT OF 221 COWS DURING TWO YEARS

Annual yield of fat-corrected[1] milk		Annual input of total digestible nutrients		Body weight	
Class interval lbs.	Number of records	Class interval lbs.	Number of records	Class interval lbs.	Number of records
2000–2999	5	3000–3499	2	530– 629	4
3000–3999	26	3500–3999	21	630– 729	45
4000–4999	78	4000–4499	86	730– 829	137
5000–5999	112	4500–4999	105	830– 929	131
6000–6999	126	5000–5499	143	930–1029	93
7000–7999	64	5500–5999	69	1030–1129	21
8000–8999	27	6000–6499	15	1130–1229	9
9000–9999	4	6500–6999	1	1230–1329	0
				1330–1429	2
Total	442	Total	442	Total	442
Mean yield	5954 lbs.	Mean yield	4959 lbs.	Mean size	864 lbs.
St'd dev'n	1341 lbs.	St'd Dev'n	605 lbs.	St'd Dev'n	117 lbs.

[1] See accompanying text for definition.

It was observed while assembling these data that feeding practices of the herdsmen were hardly consistent with accepted standards. The daily rations of individual cows were not varied systematically according to individual levels of production, but all cows in each herd tended to receive the same allowance of roughage and concentrates. Between years, however, the level of feeding within each herd tended to change, so that the feed input of individual cows tended also to be different from year to year.

Although cows within herds tended to receive the same amounts of feed, they differed widely in their milk yields. This was obviously an effect of differences between the productive capacities of individual cows. A statistical treatment of the data was sought which would isolate and remove from the total variance of milk yield, of nutrient input, and of body weight, that portion which was associated with average differences between cows. There were two consecutive years' data for each of 221 cows, or 442 sets of observations in all. For an analysis of variance and covariance the degrees of freedom were analyzed as follows:

Source of variation	Degrees of freedom
Differences between years	1
Differences between cows	220
Differences within cows	220
Total	441

The "within cows" variance and covariance approximates the variance and covariance that would result if cows of identical productivity and size were fed varying amounts of feed, although it includes the variations arising from causes that are independent of years, herds, or average differences between cows, as well as variations resulting from the varying amounts of feed. These

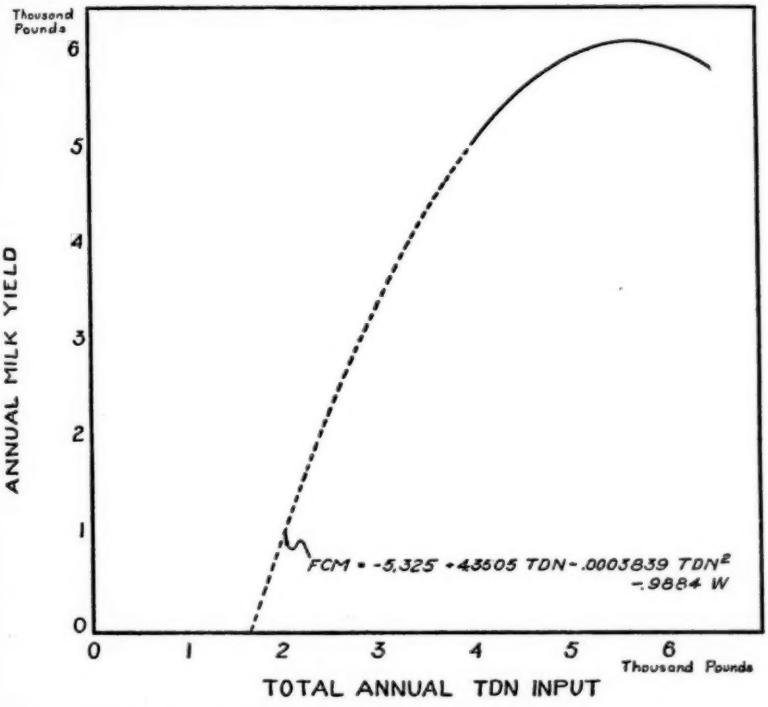

FIG. 1. RELATION BETWEEN TOTAL DIGESTIBLE NUTRIENT INPUT AND MILK YIELD "WITHIN COWS" IN WEST VIRGINIA HERDS. THE SOLID PORTION OF THE REGRESSION LINE INCLUDES THE RANGE OF THE NUTRIENTS DATA.

variances and covariances were used in finding the least squares solution in the following equation:

$$FCM = -5{,}325 + 4.3505\ TDN - .0003839\ TDN^2 - .9884\ W.$$

This equation gives the relation between nutrient input and milk yield for 221 cows having an average body weight (W) of 864 pounds and an average productivity of 5,954 pounds of four per cent fat-corrected milk (FCM) annually at an annual total digestible nutrient (TDN) input of 4,959 pounds (including esti-

mated *TDN* obtained from pasture), under dairy herd management conditions prevailing on 26 farms in the Wheeling, West Virginia, milkshed. As described by this equation, milk yields increased to

TABLE 3. SUMMARY OF PRINCIPAL VALUES DETERMINED IN THE ANALYSIS OF TWO YEARS' FEED INPUT: MILK YIELD DATA FOR 221 DAIRY COWS

Analysis of variance of FCM, TDN and W

Source of Variation	Degrees of Freedom	Sums of Squares		
		FCM	*TDN*	*W*
Between years	1	12,345	8,789	1,744
Between cows	220	5,684,928	976,452	50,285
Within cows	220	2,237,396	626,848	8,666
Total	441	7,934,669	1,612,089	60,695

Regression of FCM on TDN and W "within cows"

Regression equation: $M = a + b_{MN \cdot N^2W} N + b_{MN^2 \cdot NW} N^2 + b_{MW \cdot NN^2W}$

$a = -5,325$

$b_{MN \cdot N^2W} = 4.3505 \pm 1.6602$

$b_{MN^2 \cdot NW} = -.0003839 \pm .0001674$

$b_{MW \cdot NN^2} = -.9884 \pm 1.0382$

Significance of regression

Source of Variation	Degrees of Freedom	Sums of Squares	Mean Square
Linear regression	2	216,283	108,141
Deviations from linear	218	2,021,112	9,271
Total within cows	220	2,237,395	
Curvilinear regression	3	264,131	88,044
Deviations from curvilinear	217	1,973,264	9,093
Total within cows	220	2,237,395	
Curvilinear minus linear	1	47,848	47,848
Deviations from curvilinear	217	1,973,264	9,093
Deviations from linear	218	2,021,112	

Coefficient of correlation (R) "within cows"

Linear in *TDN* ..... .3109

Curvilinear in *TDN* ..... .3436

a maximum of about 6,150 pounds with increasing quantities of total digestible nutrients up to about 5,800 pounds (Fig. 1). Larger *TDN* inputs were accompanied by smaller *FCM* yields. Further pertinent information is given in Table 3.

Before discussing the significance of these results, it is of interest to compare them with the results of the U.S.D.A.-State studies. The principal difference is that the U.S.D.A.-State total production curves showed no tendency to reach a maximum within the range of *TDN* inputs reported. The West Virginia cows of average productive capacity appeared to reach a maximum yield that was about 14 per cent higher than that associated with rates of feeding equal to those of the Morrison standard.

Several reasons may be suggested for this difference. It may be characteristic of the difference between the inherent productivities of the two groups of cows. Quite possibly the quality of the management of the West Virginia herds was a limiting factor, becoming effective only at the higher *TDN* inputs. If either of these factors are dominant, the differences between these studies become profoundly significant. The U.S.D.A. results would represent a goal, the attainment of which would depend on joint presence of improved breeding and improved management practices. The West Virginia results would represent the yields more likely to be attained in the average herd.

Aside from possible real differences, the divergent results may come from differences in experimental techniques. Obviously, the West Virginia records, taken on a sample basis under farm conditions, must have been considerably less precise than the U.S.D.A.-State data. Aside from this, there are several features of the U.S.D.A.-State method of analysis which differ from the methods used on the West Virginia data. First, the adjustment for differences in body weight between cows by computing a maintenance allowance could easily lead to different results than a method of analysis which apportions nutrients to maintenance according to the multiple regression inherent in the data under consideration. The arbitrary computation of maintenance allowances may influence the slope of the regression curve.

Another difference in techniques is that the use of production records from previous lactations alone may not adjust differences in productive capacity in the same way as an analysis of variance which isolates the effect of between-cow differences that are present during the experimental years.

From the shape of the total production curve for the West Virginia cows it can be calculated that there are important differences between the levels of *TDN* input that are profitable at different

ratios between feed prices and milk prices. Data for such calculations are given in Table 4.

The proper total annual *TDN* input for the West Virginia cows, of course, would be the total corresponding to the marginal input

TABLE 4. TOTAL MILK PRODUCTION, AND MARGINAL AND AVERAGE INPUTS OF TOTAL DIGESTIBLE NUTRIENTS PER POUND OF FOUR PERCENT FAT-CORRECTED MILK AS DETERMINED FROM RECORDS OF 221 COWS IN WEST VIRGINIA DAIRY HERDS.

Annual *TDN* Input		Total product	Marginal input	Average input
Total	Above maintenance			
lbs.	lbs.[1]	lbs. *FCM*	lbs. *TDN* per lb. *FCM*[2]	lbs. *TDN* (above maintenance) per lb. *FCM*
3500	1000	4345	—	.230
3600	1100	4507	.612	.244
3700	1200	4662	.645	.257
3800	1300	4809	.680	.270
3900	1400	4949	.714	.283
4000	1500	5081	.758	.295
4100	1600	5205	.806	.307
4200	1700	5321	.862	.319
4300	1800	5430	.917	.331
4400	1900	5531	.990	.344
4500	2000	5624	1.075	.356
4600	2100	5710	1.163	.368
4700	2200	5788	1.282	.380
4800	2300	5858	1.429	.393
4900	2400	5921	1.587	.405
5000	2500	5976	1.818	.418
5100	2600	6023	2.128	.432
5200	2700	6063	2.500	.445
5300	2800	6095	3.125	.459
5400	2900	6119	4.167	.474

[1] Computing a maintenance allowance for an 864-pound cow at the Morrison standard rate of 7.925 pounds daily per 1,000 pounds of body weight.
[2] Average for the preceding 100 pounds of increase in *TDN*.

that equates the cost of feed with the value of the marginal milk yield. For example, during the first year of the cost-of-production study from which the records were obtained (1936–1937), .645 pound of *TDN* in concentrates were equal in price to one pound of *FCM*. The greatest return above feed cost at these prices was indicated for a total annual input of 3,700 pounds of *TDN*. During the second year, with .800 pound of *TDN* in concentrates equal in price

to one pound of *FCM*, the optimum total annual input of *TDN* amounted to nearly 4,000 pounds. The associated average rates of *TDN* input were both considerably less than recommended according to the Morrison standard. However, the ratio of feed prices to milk prices was unusually high. During the five years of 1937–1941, the national average of prices of corn and milk gave a ratio of 1.69 pounds of *TDN* in corn to equal one pound of wholesale milk. Such a price ratio would indicate a rate of feeding for these cows considerably more intensive than is generally recommended.

Regional Differences in Intensity of Feeding

Adjusting feeding practice for variation in price ratios due to differences in location may be a more important application of this input-output relationship than adjusting for variation in prices from year to year. Thus, the average gross income per hundredweight of *FCM* in New Jersey in 1940 was $3.65.[9] In South Dakota it was $1.10. The farm price of corn, per hundredweight of *TDN* content, was $1.74 in New Jersey and $1.25 in South Dakota.[10] In New Jersey 2.1 pounds of *TDN* were equal in price to one pound of *FCM*, while in South Dakota the ratio was 0.9 to 1.

Assuming that cows in both states were of the same average productivity as the West Virginia cows, the indicated most profitable rate of *TDN* input per cow would support a yield of about 6,000 pounds *FCM* in New Jersey, and 5,400 pounds in South Dakota. Actual averages were, respectively, 6,160 pounds and 3,270 pounds.

Further state-by-state comparisons reveal significant general relationships between feed:milk price ratios and average production per cow. Such data for 21 North Atlantic and North Central States are shown in Figure 2. These regions may be considered to be relatively homogeneous with regard to climate and crops, so that differences in production might reasonably be compared with differences in feed:milk price ratios throughout the entire area. The correlation between price ratios and production per cow for these states was .79, which indicates strongly that rates of feeding tended to be adjusted in accordance with price ratios.

It would be difficult to get statistical information adequate to determine the actual differences in rates of feeding between states.

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[9] Computed from data in Farm Production and Disposition of Milk, 1940–1941. U.S.D.A. Agr. Marketing Service, April, 1942.

[10] Agricultural Statistics, 1941. U. S. Dept. Agr.

There is a bias evident in the data shown in Figure 2. Production in the Western states of the group was relatively lower than the most profitable rate of production indicated for the West Virginia herds. If this deficiency is ascribed to lower inherent productivity of the cows, that condition in itself would not be inconsistent with the primary importance of differences in the most profitable rates

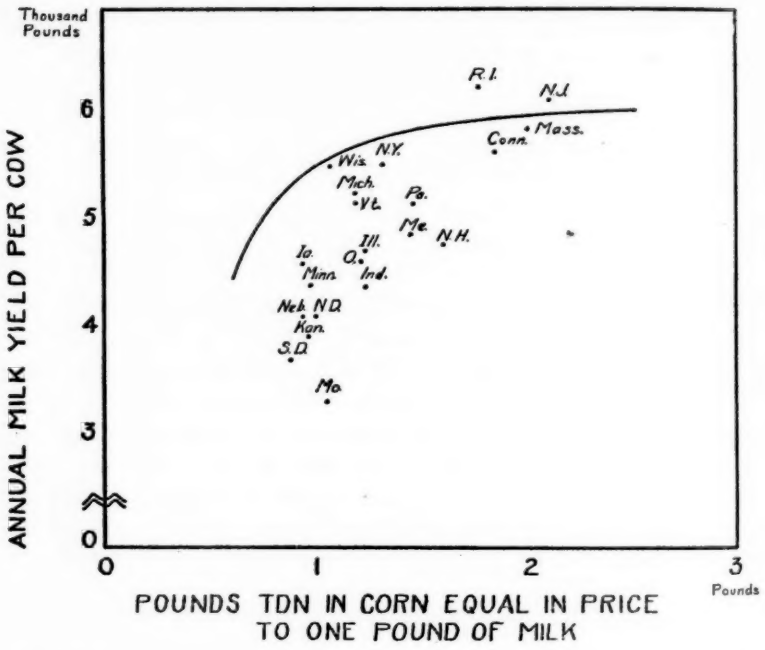

FIG. 2. RELATION BETWEEN MILK YIELD PER COW AND THE RATIO OF FEED PRICES TO MILK PRICES IN 21 NORTH EAST AND NORTH CENTRAL STATES. THERE IS EVIDENCE OF REGULATION OF INTENSITIES OF FEEDING ACCORDING TO THE PRICE RATIOS. THE CURVE SHOWS PRODUCTION AT PROFITABLE RATES OF FEEDING ACCORDING TO RELATIONSHIPS SHOWN IN FIGURE 1.

of feeding. Having milk higher in price relative to the price of feed, the Eastern states would produce milk at a relatively higher return above feed cost per cow than would the Western states, even assuming cows of equal productivity. But part of the higher return in the intensive dairy areas of the East would probably be capitalized in the price of cows. This would permit greater expenditures in the breeding and selection of cows, or it would enable Eastern dairymen to outbid Western dairymen for the choicest cows raised

in the West. Hence, it is consistent to expect the East to have developed more highly productive cows over a period of years because of the regional advantage in feed:milk price ratios, an advantage which is accentuated by the nature of relations between feed input and milk yield.

Conclusions

It has been generally recognized that dairymen tend to feed their cows more heavily when milk is higher in price relative to feed. The present study in part confirms results reported previously by the United States Department of Agriculture and cooperating State experiment stations. It shows that feed input-milk output relationships provide a valid basis for using different rates of feeding where and when there are different ratios of feed prices to milk prices.

The results of this study indicate that milk yields increase at a decreasing rate with increasing total digestible nutrient inputs, reaching a maximum yield of 114 per cent at a *TDN* input of 138 per cent when 100 per cent represents the yield and input attainable with the Morrison standard rate of feeding. The U.S.D.A. results did not indicate that the maximum yield was obtained within the range of nutrient inputs used. The difference between the two sets of results may arise from differences in experimental and analytical procedure, from inherent differences between the groups of cows, or from differences in the quality of herd management. Assuming equal validity for the experimental procedures, the West Virginia data indicate probable results from the use of different rates of feeding in ordinary farm herds, while the U.S.D.A.-State data indicate results achievable under conditions of superior herd management.

It is apparent from state averages of feed prices, milk prices, and production per cow, that there are significant regional differences in rates of feeding, ascribable mainly to regional differences in ratios of feed prices to milk prices.

ADAPTATION OF CROP INSURANCE TO TOBACCO

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AGRICULTURAL leaders and insurance carriers have long been interested in the possibility of insuring growing crops against unavoidable hazards. Bumper crops in one locality or in one year with partial or total crop losses in other localities or in other years, suggest the desirability of a wider distribution of risks and the possibility of supplementing the lean years with the good years.[1] In recognition of the economic consequences of crop losses and in view of the need for an orderly arrangement of providing for these losses, Federal crop insurance was made available to wheat growers in 1939 and to cotton growers in 1942.[2]

Federal crop insurance, as applied to wheat and cotton, is characterized by the following features: (1) Premium and losses are calculated in kind and are payable in kind or in cash equivalents; (2) reserves are carried in the insured commodity which, together with the arrangement for paying premiums and losses in kind, separates production hazards from price movements, and (3) coverage is limited to yields without regard to quality or market values. The writer is especially concerned with whether or not these features could be applied to a plan for crop insurance for tobacco. Also, would yield coverage, without regard to quality, provide the same degree of protection for tobacco growers as it does for wheat and cotton growers?

Payments of premiums and losses in kind or in cash equivalents and the operation of a commodity reserve necessitates the conversion of commodities into cash and cash into commodities. Successful execution of these transactions and consequently the workability and adaptability of an "in-kind" plan of insurance are conditioned by the market organization and the general acceptance of grades and grade-price differentials. These requirements are closely associated with homogeneity of the commodity which makes possible the acceptance of uniform grade requirements for the entire producing area. From the standpoint of grades and grade-price

[1] Experience of insurance carriers in the field of All-risk Crop Insurance is discussed in: Report and Recommendations of the President's Committee on Crop Insurance, Washington, D. C. December, 1936.

[2] See J. C. Clendenin, Federal Crop Insurance in Operation; Wheat Studies of the Food Research Institute, Vol. XVIII, No. 6, March, 1942.

differentials and a market organization which provides for the free interchange of grades and continuous buying and selling, wheat and cotton are well adapted to a payment-in-kind plan of insurance.

Tobacco, from the standpoint of marketing organization, grades, grade requirements, and lack of homogeneity, provides an interesting contrast to wheat and cotton. Without going into an extended review of tobacco production, grading and marketing, attention is called to certain commodity and market characteristics that are especially pertinent to a plan of crop insurance. Tobacco is classified on the basis of curing methods employed, characteristics of the cured leaf, principal use to which the tobacco is put, geographic location of producing area, and in some instances according to the variety of seed used. The official classification of tobacco established by the Department of Agriculture recognizes six domestically grown classes of tobacco, exclusive of a minor miscellaneous class. The 6 classes are subdivided into 26 types and each of the principal types has upward of 50 market grades. Each type has specialized uses and definite distinguishing characteristics which are closely associated with soil, climatic conditions, and methods of curing.

The principal types of tobacco are marketed, during a relatively short marketing season, through decentralized markets located in the producing areas where farmers sell their tobacco at auction to exporters, domestic manufacturers, and tobacco dealers. Perhaps even more important from the standpoint of adapting a plan of insurance to tobacco is the fact that there are no highly organized central markets corresponding to the grain and cotton exchanges. Consequently, the marketing system does not provide for continuous buying and selling or for the interchange of grades, as do the grain and cotton markets. Outlets for unmanufactured tobacco are concentrated in the hands of a few buyers; and selling, buying, replenishing, or shifting of supplies after the close of the regular marketing season is done by private negotiations. This situation would make it impracticable, if not impossible, to immediately convert cash into tobacco and tobacco into cash, as would be necessary in a pay-in-kind and commodity-reserve plan of insurance. Numerous distinct types, each with a multiplicity of grades, together with the lack of established grade-price differentials would add to the difficulty of making premium payments and loss adjustments in kind.

Adequacy of the protection provided under a yield-coverage plan

of insurance is conditioned by yield patterns and the relationship between yields and returns. Insurance as applied to wheat and cotton is based on, and was justified by, variations in yields. For these commodities, variations in yields are pronounced, while quality is relatively stable. Tobacco, as compared with wheat and cotton, is characterized by relatively stable yields and wide fluctuations in quality. Satisfactory yields may be obtained even though the tobacco produced is of such inferior quality that it is almost worthless in a market sufficiently remunerative for tobacco of average quality. Consequently, a plan of crop insurance for tobacco probably should be based on fluctuations in quality as well as variations in yields.

A possible plan of insurance for tobacco combines yield and quality into a "yield-quality" coverage. Quality of tobacco produced and the yield per acre would be determined for each grower from records of performance during a representative base period (Table 1). The numerous types and grades and the irregularity of price spreads for a given grade would make it extremely cumbersome and difficult to determine quality on a grade composition basis. Consequently, the "round price" or the average price the grower received for his entire annual production would be used as a measure of quality. Annual quality for an individual grower would be determined by the relationship between the grower's price and the seasonal price for the type or class of tobacco produced. The average of the grower's annual quality ratings would become his "quality-index" for insurance purposes.

The writer realizes that in some instances the price received by an individual grower is not a true indication of the quality of tobacco produced. Price fluctuations for the same grade of tobacco selling in the same market at the same time, as well as varying price spreads between given grades, are not uncommon. Seasonal variation in prices is important and in some seasons pronounced. The market situation, the weather at marketing time, how the tobacco has been handled, and other circumstances and conditions may influence the buyer's opinion of the tobacco and, consequently, the price paid. Despite these seemingly uncontrollable and undesirable situations, quality is the most important consideration in determining price; and, in most cases, the price the grower receives for his tobacco in relation to the seasonal price for the type produced is a reasonably accurate expression of quality.

As shown in Table 1, yields, like the grower's quality index would be calculated from individual farm-yield histories. Yield data, however, are available for a longer period of time than individual price information, and it would be possible to extend the base period for purposes of determining yields. The grower's annual yields would be established and the average of the annual yields would be the grower's yield for insurance purposes. Finally, yield and quality histories would be combined into a yield-quality coverage.

TABLE 1. COMPUTATION OF YIELD-QUALITY COVERAGE FOR AN INDIVIDUAL GROWER

Year	Yield per acre	Grower's price per pound	Market average for the type	Grower's quality rating	Yield-quality coverage per acre expressed in pounds and converted to dollars	
	Pounds	*Cents*	*Cents*	*Per cent*[1]	*Pounds*[2]	*Dollars*[3]
1932	734	—[4]				
1933	480	9.0	10.5	85	610	60
1934	771	17.66	16.9	104	610	97
1935	731	12.63	19.1	66	610	110
1936	705	—[4]				
1937	932	—[4]				
1938	937	19.76	19.0	104	610	109
1940	1,215	18.79	16.4	115	610	95
Average	813	xxx	xxx	95	xxx	94

[1] Grower's price in percentage of market average.

[2] 610 pounds (75 per cent of average yield) of tobacco of a specified quality (95) or a yield-quality production equivalent to 610 pounds of the quality indicated (95).

[3] Yield-quality coverage (610) times 95 per cent (grower's quality index) of the market average price in the year of insurance. For 1933 the calculation would be: .95×.105×610=$60. The quality factor could be applied to the pounds (.95×610) and the coverage expressed as: 580×.105 or $60. This conversion would be made at the close of the marketing season in the year of insurance and the results used as a composite measure of yield-quality coverage.

[4] Price information for individual grower not available.

Assuming 75 percent coverage, a grower would be assured of a return equal to 75 percent of his average yield times his quality index, applied to the market price in the year of insurance. Coverage in pounds would be converted into dollars at the close of the marketing season; and, if the grower's returns were less than his yield-quality coverage expressed in dollars, he would be indemnified accordingly. Returns would be interpreted as a composite expression of yield and quality, and variations in the grower's relative returns would be used to measure yield and quality fluctuations. Under this arrangement the grower would be insured on the basis

of his relative position in the market; but whether or not he shares in a high or low market is a risk the grower would continue to assume.

As shown in Table 1, the grower's actual yields and prices are used in computing his coverage. Coverage is expressed in pounds per acre of tobacco of a designated quality. In order to determine whether this yield-quality or its cash equivalent was produced, and, consequently, whether the grower is due an indemnity, it is necessary to convert yield-quality coverage in pounds to dollars. The market average price for the year of insurance is used in making this conversion; as a result, coverage in dollars could not be ascertained

TABLE 2. COMPUTATION OF INDEMNITIES UNDER DIFFERENT YIELD AND PRICE CONDITIONS

Yield per acre	Grower's price per pound	Market average price per pound	Coverage per acre[1]	Actual returns per acre	Indemnity[2]
Pounds 600	*Cents* 20	*Cents* 18	*Dollars* 104.31	*Dollars* 120	*Dollars* None
900	10	18	104.31	90	14.31

[1] Coverage in pounds converted to dollars: 610 pounds (Table 1) times 95 per cent of the market price (18 cents).

[2] Coverage (converted to dollars at close of the marketing season) minus the the grower's actual returns.

until the close of the marketing season. At the close of the marketing season, coverage in dollars and actual returns per acre would be compared; and, if the grower's total returns were less than his coverage in dollars, he would be indemnified for the difference.

Indemnities would be paid in cash (Table 2), and under the proposed plan the grower might produce a relatively low yield or a relatively low quality without suffering a "dollar" loss. If the grower's yield per acre is low, it would be possible for his quality to be high enough to offset the low yield. Likewise, if his quality is low, it could be offset by a high yield per acre. If the grower, with the yield quality coverage established in Table 1, produced, in the year of insurance only, 600 pounds of tobacco and sold it for 20 cents in an 18-cent market, he would not be eligible for indemnity (Table 2). If, however, his yield were 900 pounds and he sold for 10 cents in an 18-cent market, he would receive an indemnity of $14.31 per acre. In the first example, the low yield of 600 pounds is offset by a relatively high quality. In the second example, even

though the yield was relatively high, it was not sufficient to compensate for the low quality.

Conversion of coverage to dollars and the use of dollar returns as a measure of production (yield-quality) might easily be confused with a plan to "peg" prices or insure a definite return. The plan under consideration is strictly yield-quality coverage and does not insure price or returns. The grower would be insured only for a definite poundage of tobacco of a specified quality or a production equivalent to his yield-quality coverage. What this quality of tobacco will bring or what the grower's returns will amount to and, consequently, what his coverage in dollars will amount to will depend entirely upon the market average price in the year of insurance. The grower would be assured of his position in the market, but the plan in no way provides for insuring a predetermined price or return. This is an important consideration, since for crop insurance purposes it is generally agreed that production hazards should be kept separate from price movements.

Premiums, like indemnities, are calculated and payable in cash and are based on the average loss experience during a representative period of years. In Table 3, using yields, prices and coverage established in Table 1, actual returns and loss costs are computed for an individual grower. The grower's yield-quality coverage, 610 pounds, has been converted to dollars and losses arrived at by comparing "dollar-coverage" with actual returns. This grower has a total loss per acre of $35 for the 5 years for which individual price information is available, or an average annual loss of $7 per acre. Since his average annual dollar-coverage was 94, his average annual loss was 7.4 percent of his average coverage. His premium rate, if based on his individual experience or loss record, would be 7.4 per cent of his dollar-coverage in the year of insurance.

In the yield and quality record illustrated in Table 1 and 3, the grower's annual quality rating varies from 66 to 115; and for two of the five years the rating is the same. This spread is rather pronounced and perhaps it would be unwise to draw definite conclusions concerning a central tendency from a five-year history period. However, it seems that if a sufficient number of observations were available, the grower's price as a percentage of the market average should be concentrated around some central value. That is, disregarding trend factors, the average quality for an individual grower should represent the extent to which his tobacco tends to

be above or below the market average due to the continuing influences of soil, climate, and cultural and handling practices rather than the results of chance factors such as drought, flood, disease, insect damage, etc. It is the latter, however, against which protection is provided and on the basis of which premiums are charged.

Under the proposed plan, growers would be insured on the basis of their yield-quality production; and if a grower has a record for having produced high yields of high quality tobacco, his coverage would be correspondingly high. Likewise, a grower with an estab-

TABLE 3. COMPUTATION OF LOSS COSTS FOR AN INDIVIDUAL GROWER (BASED ON YIELDS, COVERAGE, AND PRICES PRESENTED IN TABLE 1)

Year	Returns per acre	Yield quality coverage expressed in dollars	Loss per acre
	Dollars[1]	*Dollars*[2]	*Dollars*[3]
1933	43	60	17
1934	136	97	0
1935	92	110	18
1938	185	109	0
1940	228	95	0
Average	xxx	94	7[4]

[1] Grower's actual returns per acre (yield times price).
[2] Yield-quality coverage converted to cash equivalents. See Table 1.
[3] Coverage per acre (expressed in dollars) minus actual returns per acre.
[4] Loss per acre=7/94 or 7.4 percent. Premium if based on individual loss experience would be 7.4 percent of coverage (converted to dollars) in the year of insurance. The premium could be expressed as the cash equivalent of 45 (7.4 percent of 610) pounds of tobacco at 95 (quality index) percent of the market average price.

lished record of low yields and low quality would be covered accordingly. Table 3 illustrates how losses are determined for an individual grower from his own yield and quality histories; however, there seems to be some justification, and certainly some advantages, for pooling individual losses and applying a uniform percentage premium rate to a type producing district.

This arrangement, whereby it is impossible to determine the grower's dollar-coverage and, consequently, the amount of his premium in advance, at first appears to make for a rather awkward situation. However, it might be pointed out that the tobacco grower's position would be comparable to the wheat and cotton grower's position in the present program. Premiums in terms of commodity units are known to wheat and cotton growers; but

prices that will apply at premium-paying time and, consequently, the "dollar" cost of the insurance is not known until harvest time, unless losses result in an earlier settlement.

The premium for the tobacco grower in Table 3, is, and could be expressed as, the equivalent of 45 (7.4 percent of 610) pounds of tobacco at market time on the basis of 95 (quality index) percent of the market average price. As explained in Table 1, footnote 3, the quality factor (95) could be applied to the pounds (610) rather than the market price without affecting coverage. If this were done, this grower's premium would be the cash equivalent of 43 (7.4 per cent of 580) pounds of tobacco at the market average price in the year of insurance. Comparability of this to the present program is indicated by the fact that a wheat premium of two bushels per acre is, and could be expressed as, the cash equivalent of two bushels of wheat at harvest time.

Granting that an indefinite premium (rate would be definite) would introduce selling and administrative difficulties, it would, however, have certain advantages in connection with a "quality" plan of insurance. The grower in Table 3 has an average annual dollar-coverage and loss cost of $94 and $7 per acre, respectively. And the market average price for the five-year period was 16.38 cents per pound. In 1941 the market average price for this type of tobacco was 29.48 cents per pound, and this grower's yield-quality coverage (610 pounds) would have been $170. The flat rate of $7 per acre is predicated on a liability of only $94 per acre; although, assuming that this grower took insurance in 1941, the insurer's liability would have been $170. Under the arrangement whereby the grower pays for his insurance at a definite percentage of his coverage, his premium in 1941 would have been 7.4 percent of $170 or $12.58 per acre.

If we assume a 10-cent market for 1941, this grower's dollar coverage would have been $57.95 per acre and his premium (7.4 percent) would have been $4.28 per acre. In this instance, as in the one above, the grower would be paying only for the protection obtained. If the premium consisted of a flat acreage charge, the grower in years when prices were higher than the average for the history period would be getting more protection than he had paid for. Likewise, in years of unusually low prices, the grower would pay an excessive amount for the protection provided. A percentage rate applied to the coverage results in a premium which fluctuates with coverage provided and liabilities assumed.

Reserves or premiums collected in excess of indemnities paid, under the proposed plan, would be carried in cash. This is in keeping with the suggestions concerning premium and indemnity payments which would also be on a cash basis. As pointed out in connection with premium rates, the amount of the premium would be influenced by the market price for tobacco in the year of insurance. That is, if the seasonal average price for tobacco were high, the grower's coverage and premium would also be relatively high. Likewise, in years when prices were low, his coverage and premiums would be relatively low. Consequently, year-to-year fluctuations in market prices should not result in an excess or a deficit of premiums collected as compared with indemnities paid. This is perhaps an over-simplification of the issue since it implies that, assuming constant yields, the same relationship between premiums and indemnities would prevail from year to year regardless of whether the market average price was high or low. Granting that there would be some variation in loss ratios as between widely separated market levels, deficits or carry-overs resulting from year-to-year price fluctuations should not be a serious consideration.

Reserves or excesses, and likewise deficits, of premium income over indemnities paid would, for the most part, result from variations in yields. If we assume two years in which market prices were the same, premium collections would be the same regardless of yields, since premiums are based on average yields and average quality. However, if we assume that in one of these years yields were low and irregular, indemnities would be relatively high and probably would exceed premiums. In years when yields were high and uniformly good, premium income should exceed indemnities paid, resulting in a cash reserve to be carried in anticipation of future losses.

Reserves could be accumulated in years of either high or low prices. Likewise, the grower, even though he pays premiums each year in proportion to his coverage, could suffer a loss in a year when prices are either higher or lower than they were in previous years. This results from the fact that indemnities would be paid on a basis of the current market regardless of how the current market price compared with previous years in which the grower had paid premiums.

PARITY AND PROGRESS

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CURRENT controversy regarding farm price ceilings involves the relationship between two associated and highly variable factors: farm prices and farm income. Farm prices may be readily learned; the determination of the actual net returns to agriculture is a much more difficult problem. Yet it is the net returns, rather than price alone, that determines the position of farmers relative to other groups in our economy, and determines in urgent times whether or not the production of needed food products will be stimulated. The farmer, like the business man, uses a net rather than a gross figure. Though he derives this net figure by perception rather than by bookkeeping, he uses it none the less.

Since the actual returns to agriculture are not readily learned, price has been resorted to as a yardstick, and parity of prices has become accepted by certain groups as the ultimate in equity. This raises a question as to whether the relationship between price and income remains constant over a period of years. Does parity of prices automatically assure parity of income? Would the maintenance of a parity price freeze the farmer's standard of living as of 1910–14? Or have improved methods of production so decreased costs that a given price returns a larger income than 30 years ago?

Light may be shed on these questions by a study of data on actual net returns to farming.

Farm Labor Earnings

Farming partakes of the aspects of capitalism, of labor, and of subsistence. The measurement of returns under these conditions is extremely difficult, not to be quickly computed from index numbers. The only feasible way to determine the actual net returns to farming is to go out into the country and learn them, either by farm management surveys or by farm account studies. Perhaps the best accounting tool yet devised for the measurement of these returns is that of labor earnings. This measure of profit takes into account not only the difference between cash receipts and expenditures, but eliminates receipts from sources other than the farm business, and considers the use of capital, government payments, inventory changes during the year, family labor, and the value of

products furnished the household. Farm labor earnings thus provide a net income figure that comes nearest to being comparable with the wage or salary of a worker in some other line of business.

From 1913 to 1939, 631 comparable farm business analysis studies comprising 20 or more farms each were completed in the Northeastern states,[1] including studies by both the colleges and the United States Department of Agriculture. A total of 48,153 individual farm businesses were studied over the 27 years.[2] These

[1] Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania.

[2] In 22 of the 27 years, more than 1,000 farm businesses were studied. The greatest number of records, 5,283, included in 58 studies, was taken in the year 1914, when farm record studies were being expanded under the Office of Farm Management. The records in that year constituted a sample of slightly less than one per cent of the farms in the area. The smallest number of records, 407, from only 6 studies, was taken during the year 1920, providing a sample of about one-tenth of one percent. Had the studies been distributed equally throughout the period, there would have been 1,783 farms studied per year, an average yearly sample of somewhat less than half of one percent of the farms in the area.

All comparable and usable projects completed by the colleges and the U. S. Dept. of Agr. were summarized. Only those studies that were incomplete or were incomparable as to method were eliminated.

The adequacy of sample as regards type of farming is of interest. The major type of farming in the Northeast is dairying, and this was reflected in the studies. Throughout the period, an average of seventy per cent of the studies showed dairying as the major enterprise. During 24 of the 27 years, the percentage of studies with dairying as the major enterprise fell between 50 and 90. The extreme range was from 46 percent dairy studies in 1928 to 94 percent in 1923.

One or more studies with fruit as the major enterprise were completed each year. Studies with truck farming as the leading source of income were included in 20 of the 27 years, and for poultry, in 17.

A comparison with census data confirms the validity of emphasis on dairy farming. Thirty-three per cent of the farms in the region were classified by the census as dairy farms. Next in importance were poultry farms, comprising 8 percent of all farms, followed by crop-specialty farms, truck farms, and fruit farms, 6, 4, and 3 percent respectively of all farms in the area. Twenty percent of the farms were classified by the census as general farms.

A direct comparison between type of farming as shown in the census and the type of farming reported by the farm business studies is difficult for several reasons. The census classifies a farm as being of a particular type if 40 percent or more of its income is derived from one particular source, while the farm business studies designate the major source of income shown by the study regardless of whether or not it was as great as 40 percent of the total. More important, the census classification is for individual farms and the farm business study classification is for groups of farms. The combination of individual farms into groups of 20 or more has the effect of emphasizing the major type of farming, dairy, and submerging the less important types, such as poultry, fruits, and vegetables. If there are two white beans to every one black bean in a bushel, and successive samples of 20 or more beans each are drawn from the bushel, the proportion of samples in which the number of white beans exceeds the number of black beans will be greater than the ratio of white to black beans in the bushel. Consequently, for farm business studies the validity of sample as regards type of farming is perhaps more dependent upon comparability from year to year than upon agreement with the proportions of individual farms of various types shown by the census. The consistent preponderance of dairy studies is noteworthy in this respect.

studies, as well as others from all sections of the United States, were summarized by H. W. Hawthorne of the United States Department of Agriculture and were published late in 1941.[3]

An analysis of these 631 studies permits the preparation of an annual series of net dollar returns per farm in the Northeast since 1913. The use of labor earnings as a measurement[4] permits a comparison with the income of non-agricultural groups.[5] The series is shown in Table 1 and Figure 1.

The variability of the series is immediately apparent. From 1919 to 1932, average farm labor earnings fell from $1,449 to $-183. There was also considerable variability within each year. In 1919, one study reported labor earnings of $941, while another study reported $1,811. In 1932, one study in Maine showed a loss of $7,823, while another in New Jersey showed labor earnings of $1,214. If data were presented by individual farms rather than by studies, the extreme variability of farm labor earnings would be even more evident. In order to give equal weight to each study, the median rather than the mean was used to obtain the average for each year.

In 1913, labor earnings for 1,348 farms averaged $608. By comparison with other occupations, this would approximate a salary of about $50 per month or about $11.50 per week. It would approximate $2 per day, or about 20 cents per hour.

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[3] Summaries from Farm Business Analysis Studies in the United States, 1907–1939, U. S. Dept. of Agr., Mimeographed report FM-26, December, 1941.

[4] Only a few of the studies reported the value of farm privileges. All reported labor income, allowing 5 percent interest on investment. Labor earnings were obtained by adding to labor income the value of non-money income per farm in the United States, as reported in Net Farm Income and Income Parity Summary, 1910–41, U. S. Dept. of Agr., Bureau of Agr. Economics, July, 1942, p. 19.

[5] This raises the question as to whether or not the 48,153 farms included in these studies were representative. During the period, farms included in the studies averaged about 50 percent larger than the average reported by the census, as measured by value of land and buildings. As a general rule, larger farms are more profitable.

Of the 631 studies undertaken, 73 percent were surveys, 20 percent were farm accounts, and 7 percent were not described. Survey records are generally considered to be more representative than farm accounts since the keeping of farm accounts requires more interest and ability than the average farmer possesses. In this study, farms in farm account projects averaged slightly smaller than the farms in survey projects as measured by total capital per farm. However, they made labor incomes averaging from $300 to $500 higher than the survey farms. The predominance of survey projects in this study inclines the analysis toward greater representativeness. The studies were of going concerns, and did not show losses such as arise from foreclosures.

In summation, the farms included in the studies were probably somewhat above average both in size and in ability to earn income. The actual economic position of agriculture in the Northeast during the years from 1913 to 1939 was probably somewhat less favorable than shown by these data.

The pattern of the price level is strongly in evidence. By 1919, labor earnings had more than doubled, rising to $1,449. The post-war deflation of 1920, 1921, and 1922 saw labor earnings drop to approximately pre-war levels. During the twenties (1922–1929), farm labor earnings fluctuated about a level approximately 44 percent above pre-war, averaging about $888 for the period.

The depression years of 1931 and 1932 were disastrous to Northeastern agriculture. During those two years the average farm made minus dollar returns even after crediting the farm with the value of the farm privileges.

The years from 1933 to 1936 were years of recovery, with labor earnings again climbing to pre-war levels. Labor earnings fell in 1937, and increased slightly during the next two years. In 1939, the last year for which data are available, labor earnings were $607, almost identically as much as in 1913, 26 years earlier.[6] With this return, the Northeastern farmer paid the living expenses for his family. In 1939 the cost of living on farms was about 10 percent higher than in 1910–1914, so that in the late 'thirties the Northeastern farmer's net income would buy less actual goods and services than before World War I.

Farm Labor Earnings and Industrial Wages

Table 1 and Figure 1 compare labor earnings in the Northeast with the wage income per *employed* industrial worker in the United States as reported by the Bureau of Labor. The data are yearly figures on a dollar basis and have not been adjusted. These two series are therefore directly comparable with one another.[7]

Farm labor earnings and industrial wages were almost identical in 1913, $608 and $600 respectively. From 1913 to 1919, farm labor earnings rose more rapidly, being higher than industrial wages each year. During these seven years, farm labor earnings averaged $930 and industrial wages $798.

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[6] Gains and losses arising from changes in the value of farm real estate were adjusted between years since they were not actual dollar gains and losses. Therefore these changes did not make their influence felt in farm labor earnings. Had they been included, farming would have been shown more profitable from 1913 to 1919 and less profitable from 1920 to 1933.

[7] The variability of the farm series is such that comparisons from year to year must be approximate rather than precise. However, the contrasts between the farm series and the industrial series are so apparent and so consistent that more refined analysis is not required.

TABLE 1. LABOR EARNINGS PER FARM IN NINE NORTHEASTERN STATES, AND WAGE INCOME PER INDUSTRIAL WORKER IN THE UNITED STATES, DOLLARS PER YEAR, 1913–1939

Year	Number of studies	Number of farms studied	Farm labor earnings per farm	Wage income per industrial worker*
1913	15	1348	$608	$600
1914	58	5283	653	603
1915	50	2560	$715	$622
1916	17	1243	928	694
1917	5	510	999	818
1918	5	1088	1156	1064
1919	12	543	1449	1188
1920	6	407	$862	$1411
1921	25	1560	724	1234
1922	22	1709	633	1182
1923	16	862	990	1274
1924	8	604	899	1273
1925	20	1186	$1054	$1293
1926	27	2030	639	1318
1927	22	1860	1231	1311
1928	35	3171	555	1323
1929	33	2524	1107	1334
1930	39	3026	$817	$1249
1931	28	2290	−134	1129
1932	25	2379	−183	929
1933	17	1117	276	900
1934	16	1353	472	983
1935	15	1228	$728	$1057
1936	32	2180	791	1129
1937	38	3053	497	1217
1938	20	1554	573	1131
1939	25	1485	607	1203

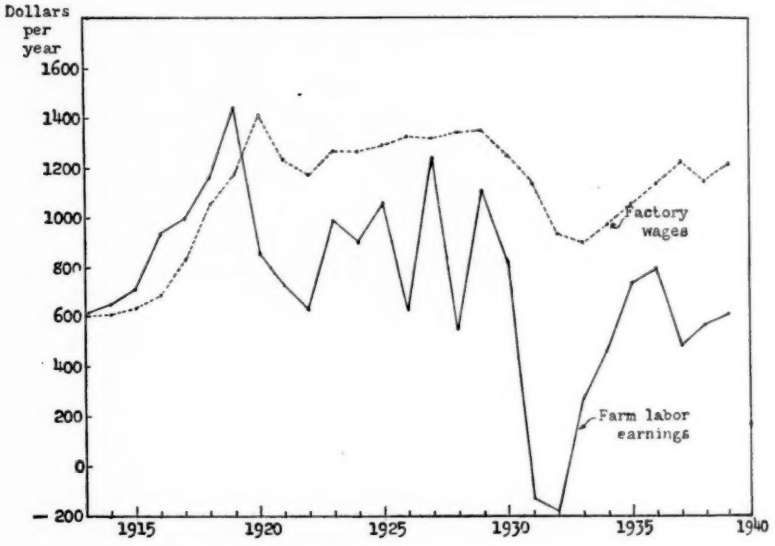
* Source: Net Farm Income and Income Parity Summary, 1910–41, U. S. Dept. of Agri., July 1942, p. 12.

However, from 1920 to 1939, farm labor earnings were below industrial wages each year. During these 20 years, farm labor earnings averaged $657 per year, only about 55 percent as much as industrial wages, which averaged $1,194.

The disparity between the two series was greatest during the depression. During 1931 and 1932, farm labor earnings went into the red and the wages of employed industrial workers averaged slightly more than $1,000. In 1939, the wages of industrial workers were about twice as high as the labor earnings of Northeastern farmers, $1,203 as compared with $607.

In 1941, industrial workers earned $1,484. This was even higher for 1942. Since data on farm labor earnings are not yet available for these years, no direct comparison between the two can be made. However, if farm labor earnings bore the same relationship to farm prices in 1940 and 1941 as during the preceding 27 years, farm

FIG. 1. FARM LABOR EARNINGS FROM 631 FARM BUSINESS STUDIES IN NINE NORTHEASTERN STATES, AND WAGES OF INDUSTRIAL WORKERS IN THE UNITED STATES, IN DOLLARS PER YEAR, 1913–1939.



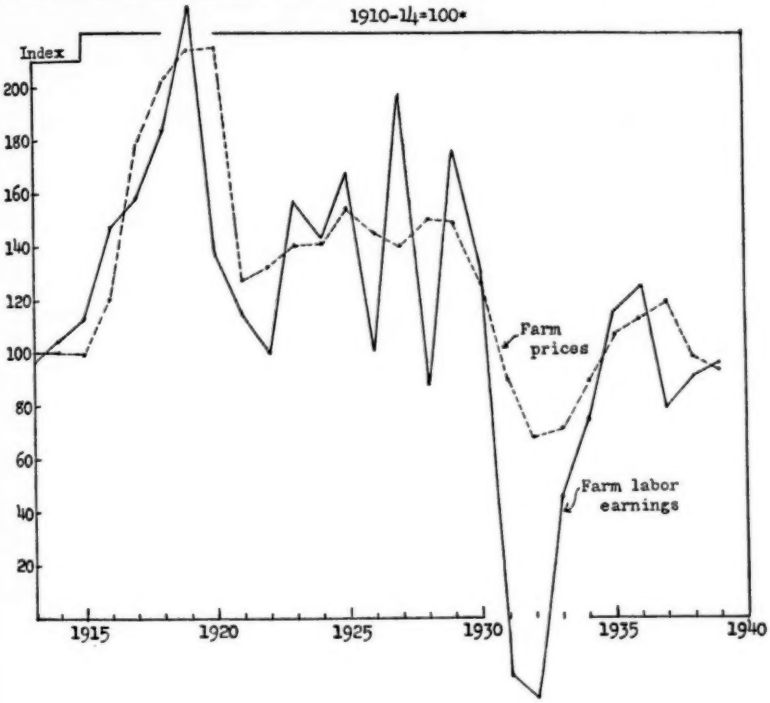
Farm labor earnings in the Northeast were higher than factory wages from 1913 to 1919, and were lower thereafter. In 1939, farm labor earnings were about half as high as factory wages.

labor earnings in the Northeast in 1941 would have been about $776, or about 52 percent as much as the wages of industrial workers. Both were probably higher in 1942, with the gap between them still wide. If the average farmer in the Northeast now receives considerably less net return than an industrial worker, his contribution to inflation cannot be particularly great.

The wide gap between farm labor earnings and the wages of industrial workers could not be bridged by migration from farm to factory during the depression because of the absence of opportunity for industrial employment. Now, however, the opportunity for industrial employment is without observable limits. Unless the

returns to agriculture rise and/or farm labor is rigidly frozen, further shifts of hired men and farm operators from farm to factory are likely.

FIG. 2. INDEX NUMBERS OF PRICES RECEIVED BY FARMERS IN THE UNITED STATES AND OF LABOR EARNINGS PER FARM, 631 FARM BUSINESS STUDIES IN NINE NORTHEASTERN STATES, 1913–1939.



Farm labor earnings in the Northeast moved with farm prices excep tduring the depression. The relationship between them was not basically changed during the 27 years from 1913 to 1939.

* Labor earnings, 1913–1914=100.

The Relation between Farm Labor Earnings and Farm Prices

The relationship between United States farm prices and farm labor earnings in the Northeastern states was close (Figure 2). Throughout the 27 years, a rise of one point in the index of prices of farm products was accompanied by an increase of one point in an index of farm labor earnings.[8] If farm prices rose 10 points, farm labor earnings per farm rose about $63.

[8] $b=+1.02$, $r^2=.59$.

During the World War I period (1915–1919), farm prices and farm labor earnings averaged 62 and 66 percent above pre-war, respectively.[9] During the 'twenties (1922–1929) farm prices averaged 44 percent above pre-war, and labor earnings were 41 percent above. However, in the worst depression years (1931–1933), farm prices fell to 76 percent of pre-war and labor earnings were wiped out entirely. It would seem that farmers had more to lose from deflation than they had to gain from inflation. With the partial recovery that occurred in the late 'thirties (1934–1939), farm prices and farm labor earnings both were approximately at pre-war levels, 104 and 97 respectively.

The elapse of 25 years has not basically altered the close relationship between farm prices and farm labor earnings in the Northeast. Though farmers produced more food per man in the late 'thirties than 25 years earlier, that efficiency was not reflected in higher labor earnings to farmers. It seems likely that the greater production per man has been partly off-set by higher prices paid for help and the necessity of buying more equipment.

The Relation between Farm Labor Earnings and Parity

A slight change in the ratio of prices received to prices paid,[10] also known as the purchasing power of farm products and as the basis of parity calculations, was accompanied by a great change in farm labor earnings (Table 2 and Figure 3). Farm labor earnings are a delicately adjusted residual of a highly unstable enterprise; a slight change in price relationships can have violent effects on net returns to farmers.

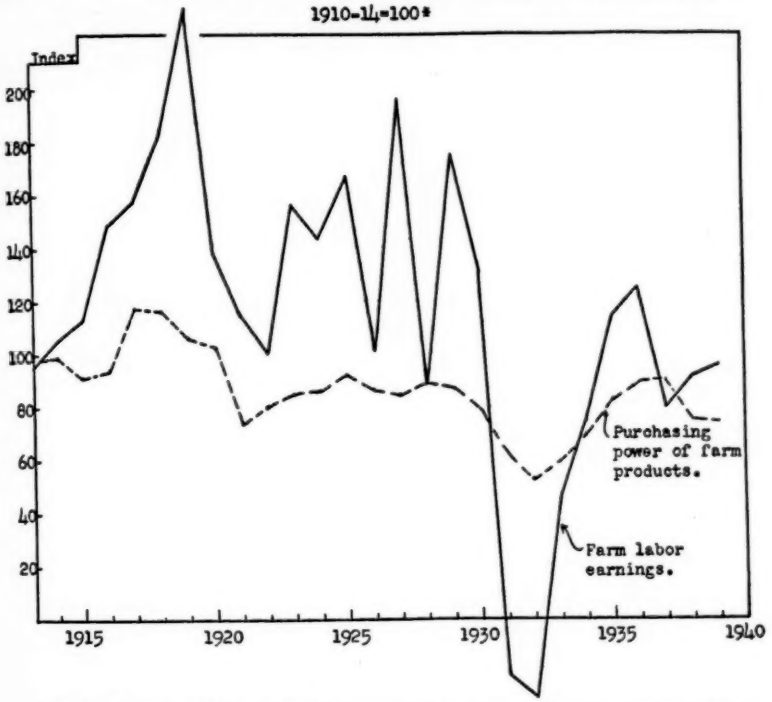
During the World War I period, the purchasing power of farm products averaged 5 per cent above pre-war, and farm labor earnings were 66 per cent above. During the 'twenties, the purchasing power of farm products averaged about 14 per cent below pre-war but farm labor earnings remained up with prices of farm products, about 40 per cent above pre-war. In the worst of the depression years, the purchasing power of farm products fell to an index of 58,

[9] For this comparison an index of farm labor earnings was made with 1913 and 1914 as the base period. Farm management data were scant prior to that period and it was assumed that 1913 and 1914 were representative of farm labor earnings during the pre-war period. Seventy-three studies comprising 6,631 farms during the two years provide a body of data sufficiently large to give considerable reliability.

[10] Including interest and taxes.

and farm labor earnings disappeared completely. During the late 'thirties, the purchasing power of farm products averaged 80 per cent of pre-war, and farm labor earnings were substantially at the pre-war level. The relationship between the purchasing power of

FIG. 3. INDEX NUMBERS OF FARM LABOR EARNINGS IN THE NORTHEAST AND OF THE PURCHASING POWER OF FARM PRICES IN THE UNITED STATES, 1913–1939.



A slight change in the purchasing power of farm products was accompanied by a marked change in farm labor earnings.
* Labor earnings, 1913–14=100.

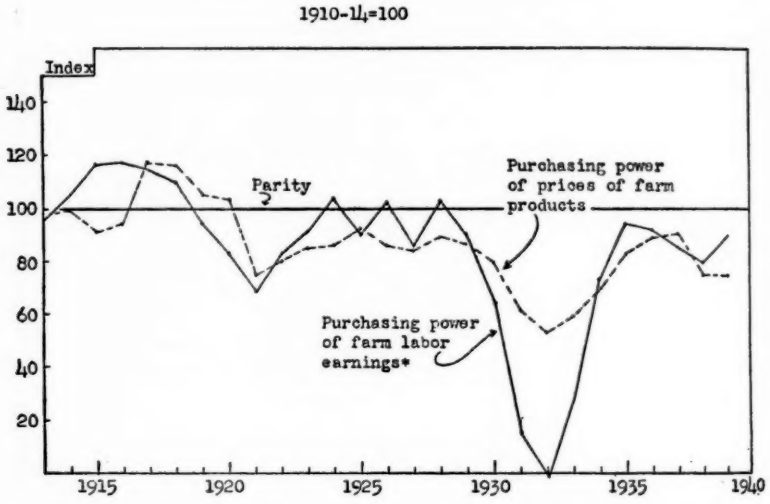
farm products and farm labor earnings was not as close as that between farm prices and farm labor earnings.

Prices, Progress, and Income

Estimates of the United States Department of Agriculture indicate that production per farm worker rose about 50 percent from 1910–1914 to 1940. It is assumed by some that the great part of this

improved efficiency has been reflected in an increase in the net incomes of farmers. Seemingly, however, improvement in the lot of agriculture in the Northeast through increased production per worker has not been great during the past 25 years *when all costs are considered.* If a marked improvement had occurred, greater net returns would have been reflected to farmers. The readily apparent and great increases in output per worker resulting from improved

FIG. 4. PARITY OF PRICES AND PARITY OF INCOME, 631 FARM BUSINESS STUDIES IN NINE NORTHEASTERN STATES, 1913–1939.



From 1934 to 1939 farm prices averaged 80 percent of parity and the labor earnings of Northeastern farmers bought 85 percent as much goods as during the base period.

* Three year moving average of farm labor earnings adjusted for changes in the cost of living on farms, 1913–1914=100.

machinery, better breeds and varieties, and better cultural practices were considerably reduced when rising costs of materials and hired labor were taken into account. Sufficient improvement was made so that in the late 'thirties agriculture was able to return farm labor earnings about equal, dollar for dollar, to those of 1913 and 1914, although operating at a price disadvantage (the purchasing power of farm products was 80 percent of pre-war). Increased production per worker somewhat more than off-set rising costs of production.

Because of changing costs of living, the ability to buy goods is a better measure of income than dollars alone.

Although the Northeastern farmer received a net return from 1934 to 1939 that was nearly equal to pre-World War I in dollars, his return was far from equal to pre-war in terms of ability to buy goods. With the cost of living on farms approximately 15 percent above pre-war and his dollar income substantially at the pre-war level, he had suffered a reduction of about 15 percent in his standard of living (Table 2 and Figure 4).[11]

There was no time from 1921 to 1939 when farm prices reached parity. The nearest sustained approach to parity came in the 'twenties. From 1922 to 1929, farm prices were about 86 percent of parity and the purchasing power of farm labor earnings in the Northeast (or the standard of living) was about 94 percent of pre-war.

Apparently the relationship between the purchasing power of prices of farm products (the parity ratio) and the purchasing power of farm labor earnings (the standard of living) was fairly close except during periods of extreme price change. Parity prices to farmers of the Northeast might be expected to result in a slight improvement over the pre-war standard of living.

The Sharing of the National Product

An acceptable index of the average standard of living in the United States is the total physical volume of production divided by the number of people. Thus measured, the amount of goods available for each person in the United States increased irregularly from 1913 to 1929, fell sharply for three years, and then recovered. The normal upward trend was interrupted by the depression so that the standard of living in 1938 and 1939 was about the same as before World War I (Table 2 and Figure 5).

Changes in the standard of living of the employed industrial worker may be determined by correcting his wage for changes in the cost of living in cities. In these terms, the standard of living of the industrial laborer rose sharply from 1913 to 1939.

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[11] Changes in the standard of living are here measured in terms of changes in the physical quantities of goods which could be purchased with farm labor earnings. Changes in the quality of goods purchased during the period are not taken into account in such a measure.

TABLE 2. INDEX NUMBERS OF PER CAPITA PRODUCTION, PRICES, LIVING COSTS, AND PURCHASING POWER, UNITED STATES AND NINE NORTHEASTERN STATES, 1913–1939

1913–14=100*

	United States						The Northeast
Year	Farm prices	Purchasing power of farm products	Cost of living on farms	Cost of living in cities	Physical volume of production per capita	Purchasing power of wages of industrial workers	Purchasing power of farm labor earnings
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1913	101	98	100	100	102	100	96
1914	101	99	100	100	98	100	104
1915	99	91	99	98	105	106	116
1916	120	94	113	108	112	107	117
1917	178	117	148	126	114	108	114
1918	202	116	174	154	112	115	109
1919	213	106	199	175	107	113	94
1920	214	103	224	204	113	115	83
1921	127	75	156	173	88	119	68
1922	133	80	144	162	104	121	83
1923	141	85	147	165	121	128	91
1924	141	86	146	163	114	130	104
1925	154	92	155	168	120	128	90
1926	145	86	156	169	124	130	102
1927	141	84	148	166	120	131	85
1928	150	89	150	164	123	134	103
1929	148	87	149	165	126	134	90
1930	127	79	138	160	106	130	64
1931	89	62	112	146	92	129	14
1932	68	53	91	133	78	116	−1
1933	72	59	92	127	81	118	29
1934	90	70	105	131	80	125	73
1935	107	83	114	134	92	131	94
1936	113	89	115	135	100	139	92
1937	119	90	121	139	112	146	85
1938	97	75	111	137	92	137	79
1939	95	74	108	136	107	147	89

* (1) and (2), 1910–1914=100.

(1) and (3)—H. R. Tolley, Material Bearing on Parity Prices, U. S. Dept. Agr., Bureau of Agr. Economics, July, 1941.

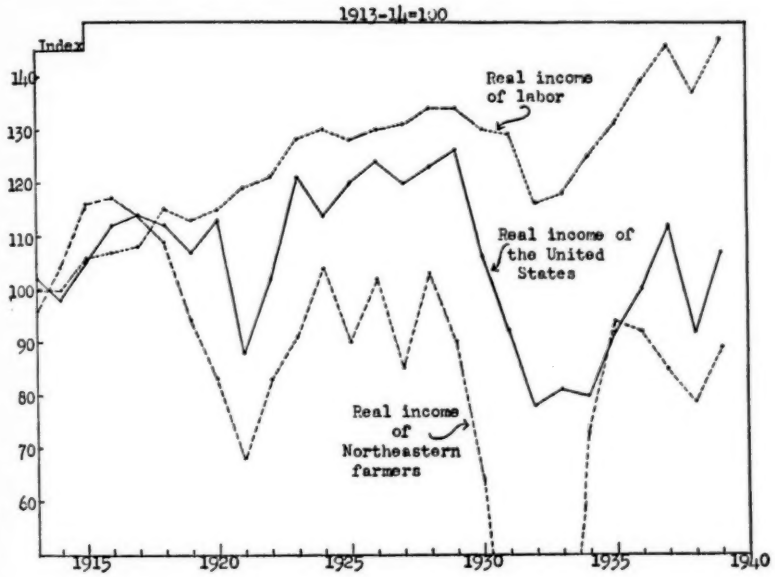
(1) Prices received for Farm Products (Table 3, Index Numbers III).

(3) Cost of Living on Farms (Table 2, Index Numbers II).

(2) Ratio, prices received to prices paid, interest and taxes, from The Agricultural Situation, Volume 27, Number 1, January, 1943, page 24.

Changes in the standard of living of the farmer may be learned by adjusting his labor earnings for changes in the cost of living on farms. Thus measured, the standard of living of the Northeastern farmer declined.

FIG. 5. INDEX NUMBERS OF PER CAPITA REAL INCOME FOR THE UNITED STATES, FOR EMPLOYED INDUSTRIAL WORKERS, AND FOR NORTHEASTERN FARMERS, 1913–1939.



As measured by physical quantities of goods produced for each person in the United States, the standard of living of the average American fluctuated considerably from 1913 to 1939, but in 1938 and 1939 was about the same as 25 years earlier. The standard of living of the employed city laborer rose. The standard of living of the Northeastern farmer declined.

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(4) Farm Economics, New York State College of Agriculture, Number 132 and earlier issues.

(5) An average of (a)—An index of total production of basic commodities per capita (G. F. Warren, and F. A. Pearson, Gold and Prices, 1935, page 49) and (b)—An index of total industrial production per capita (Hearings before the Temporary National Economic Committee, 75th Congress, December 1, 2, and 3, 1938, United States Printing Office, 222182, 1940, page 200).

(6) Wage income per employed industrial worker adjusted for changes in the cost of living in cities.

(7) Three year moving average of farm labor earnings in the Northeast adjusted for changes in the cost of living on farms.

Summary

To provide a partial answer to questions raised at the outset, it might be concluded that improvement has occurred in the production per farm worker, but that this improvement has been largely offset by rising costs. Parity of prices to the farmers of the Northeast would probably provide a net return considerably greater than pre-war in dollars and slightly greater than pre-war in command over goods. The maintenance of parity prices would give the farmer no acceptable answer to the disparity between incomes of agricultural and industrial groups.

IRRIGATION DEVELOPMENT AND AREA ADJUSTMENT IN THE GREAT PLAINS

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Bureau of Agricultural Economics

WAR work and somewhat more favorable weather have been taking the pressure off Great Plains rehabilitation. Inevitably the war will set aside many of the federal and state attempts to solve the drought-depression problems of the Plains; nevertheless, the war period offers an excellent opportunity to appraise our efforts to date, their effect, and their future direction. During the past 10 years, we have learned much about Plains agriculture, have gained an education that can be used to aid war production and also to prepare for post-war reconstruction.

Appraisal of Adjustment Measures to Date

Attempts to correct the basic causes of maladjustment in the Great Plains have met with some success. In the aggregate, however, the major difficulties have been only partially corrected. Thousands of sub-standard farms continue to be operated; much rangeland still is being farmed; and the general agricultural economy still suffers from instability and inflexibility.[1] Through a process of survival of the fittest, many operators have been able to effect satisfactory adjustments in their unit sizes and operating patterns, but often this has placed a further burden on the already small, distressed operators. More adjustments of this type may be expected unless other remedies are applied.

Thousands of low-income operators in the Great Plains have taken part in a self-propelled migration. The land resources which they abandoned came subsequently into the hands of already large operators, primarily because there was no way for low-income families to get hold of these lands.

The federal submarginal land purchase program, inaugurated in 1934, was an attempt to correct improper land use by consolidating small units and encouraging the relocation of operators in

[1] For a detailed discussion of this see E. A. Starch, Type of Farming Modifications Needed in the Great Plains in the February, 1939, issue of the Journal of Farm Economics, Vol. XXI, No. 1, pp. 114 to 120; also, Carl F. Kraenzel, New Frontiers of the Great Plains in the August, 1942, issue of the Journal of Farm Economics, Vol. XXIV, pp. 571 to 589.

better areas. This program did not, however, provide for simultaneous development of adequate feed supplies to stabilize livestock operators who were to use submarginal land for grazing. A common criticism was that operators of the submarginal lands purchased were not provided new opportunities; also, that the "little man" needing assistance often was unable to obtain grazing privileges on the submarginal land, while the large operators were allocated grazing privileges on the basis of past operations, which may have been conducted on public lands free of charge.

A resettlement program was initiated to find new homes on irrigated land for farmers whose submarginal dry-land units were acquired. This and the submarginal land purchase program were not effectively coordinated, however, with the result that many displaced farmers could not be relocated. Settlers for irrigation projects were frequently selected from widespread areas and generally no correlated program of adjustment could be carried on. Then too, most of these resettlement projects on irrigated land were developed as self-sufficient areas, and few effective attempts were made to stabilize surrounding areas through integrated use of the irrigated and dry land.

The Farm Security Administration, which succeeded the Resettlement Administration, has carried on several types of programs designed to aid low-income operators. The severity of the drought and depression of the early 1930's made necessary the expenditure of millions of dollars in direct grants by this organization to provide immediate assistance for the relief of human distress and suffering. These grants served a great need by carrying thousands of families over a very critical period. They did not, however, provide any permanent adjustment.

Standard rehabilitation loans were provided for low-income farmers. This type of aid has done a great deal to rehabilitate thousands of farm families, but its effectivesness has been limited because it could not be correlated with other adjustment programs.

The Tenant Purchase and the Farm Home Improvement programs were designed to establish farm families on adequate units. Although a movement in the right direction, these two programs have gone but a step toward the solution of the problem, primarily because adequate funds have not been available.

The effectiveness of the Agricultural Adjustment Administration program in solving the problems in the Great Plains has been rela-

tively small. It is true that a great deal of progress has been made in conservation practices. At the same time, however, the program has permitted continued cultivation of submarginal land through its system of allotments and payments based upon past history, with little consideration given to the suitability of the land for arable farming. Some progress, however, has been made in the retirement of submarginal land by payments for restoring land to grazing.

Irrigation Development as an Adjustment Means

What is the future of the Great Plains? Is it possible to develop an economy whereby most of the people now in the area can earn a livelihood with the resources available and survive future drought periods and economic depressions with a minimum of outside assistance?

Two major factors would assist in bringing about a stable agricultural economy in the plains:

1. Enlargement of currently inadequate units to family size, with the type of agriculture best adapted to the area.
2. The development of a dependable supply of winter feed for livestock through (1) the integrated use of irrigated or good dry land with grazing land and (2) the establishment of adequate feed reserves.

One step in the development of a successful agricultural economy in the Great Plains is the correction of improper land use.[2] Land not suited to cultivation should be returned to grass. Dry-land operations should be stabilized by integration with irrigated land and range wherever possible.[3]

The development of new irrigation resources provides land on which operators from overcrowded areas may be settled. Their relocation will permit reseeding submarginal cropland and enlargement of inadequate dry-land units.

The pressure of population on the land and the realization of serious maladjustment in Great Plains agriculture created a great deal of interest in the development of additional irrigation projects

[2] See Roy I. Kimmel, Unit Reorganization for the Southern Great Plains in the February, 1940, issue of the JOURNAL OF FARM ECONOMICS, Vol. XXII, pp. 264 to 270.

[3] See Roy E. Huffman and James L. Paschal, Integrating the Use of Irrigated and Grazing Land in the Northern Great Plains in the February, 1942, issue of the *Journal of Land & Public Utility Economics*, Vol. XVIII, Number 1.

during the 1930's. However, most of the undeveloped projects were costly and very few could be developed under existing financing and repayment methods.

The necessity and desirability of irrigation development and of improving the methods of financing as a basis for adjusting the Plains was recognized by the Northern Great Plains Committee in its report of October 14, 1938. This report states:

Since few irrigation projects of significant size in the Northern Great Plains can qualify as economically feasible under the National Reclamation Act, it is recommended that the following policy be adopted with respect to such irrigation projects.

The main features of the program recommended were:

(1) Relief funds should be expended so far as practicable for irrigation projects which would reduce the relief load by furnishing a reliable means of livelihood and would serve as effective units in a proper system of land and water utilization.

(2) Expenditures for projects, over and above the reimbursable portions, should be limited, insofar as practicable, by the amounts currently necessary for relief, preferential consideration being given to projects in areas where the greatest amount of relief would be provided.

(3) Detailed planning of the developmental program should be undertaken cooperatively by the various Federal agencies which would participate in construction, settlement, guidance of settlers, and the like, and by local planning agencies, and the over-all planning program should be coordinated by the National Resources Committee.

(4) Particular projects should be constructed by the Federal agency or agencies best adapted to the work involved, provided, however, that the engineering plans for relatively large projects should be subject to approval by the Bureau of Reclamation and that plans for all projects be subject to certification by the Department of Agriculture with respect to their agricultural soundness and conformity with an appropriate land use plan.

(5) Responsibility for the administration of projects upon completion shall rest with the Department of Agriculture, and settlers should be required to repay the operation, maintenance, construction, land and other charges to the extent of their ability, as determined jointly by the Bureau of Reclamation and the Department of Agriculture, in the light of the productive capacity of the land and other relevant considerations. Repayments for construction, land, and other capital charges should be made in not more than 40 annual installments. Expenditures from Work Projects Administration funds should be subject to such provisions with respect to reimbursability as the President may determine.

(6) Contracts for repayment should be negotiated by the Department of Agriculture, preferably with irrigation districts, conservancy districts or other suitable bodies.

(7) The Department of Agriculture should assume responsibility for locating on the projects persons in need of resettlement; for buying, reselling, leasing and subleasing land in order to facilitate construction and settlement; for collecting all repayments, and for guiding or advising the settlers in matters of farm practices.

This recommendation was acted upon by Congress in 1939, when the Water Conservation and Utilization program was inaugurated. This, and the amending Wheeler-Case act of 1940, constituted endorsement of the policies recommended by the Northern Great Plains Committee.

A committee of one representative of the Department of the Interior, one from the Department of Agriculture, and one from the Work Projects Administration was appointed to coordinate the work in Washington. The Secretary of the Interior, through the Bureau of Reclamation, is responsible for construction of the irrigation works. The Department of Agriculture, through the Farm Security Administration, is responsible for the agricultural development, settlement, and administration of some projects.[4] It also must certify the soundness of each project and its conformity to an appropriate land use plan.

The Farm Security Administration enlisted the cooperation of other Federal agencies where possible. Personnel from the Soil Conservation Service assisted with the appraisal and optioning of land. Two members of the Bureau of Agricultural Economics were assigned to the over-all planning of the program.

The opportunity for the development of new irrigation projects in the Plains is limited and, in most cases, the costs are high. Provision for participation on a nonreimbursable basis by the Work Projects Administration, the Civilian Conservation Corps, and such other agencies as the President may direct makes possible the development of resources which otherwise might never be financially feasible. These undertakings provide a place where people can work and live, thereby reducing the need for direct public assistance.

Dawson County, Montana—An Example of Integrated Area Development

Irrigation has often been referred to as "the life blood of the West." The areas of irrigated land correspond to the arteries of

[4] Administration of projects under the original Act was delegated to the Department of Agriculture. Under the amended Act, administration may be turned over to the Department of Agriculture by the Department of the Interior.

the human body, and just as the beneficial effects of the blood stream reach every living cell of the body, so should the beneficial effects of irrigation extend to every tract of land and every person in the area that can possibly be benefited by a given development.

The adjustments necessary to bring about a desirable balance between natural and human resources in the Plains areas should be the fundamental program of any new irrigation development. The objective of this phase of the work, herein referred to as the Area Adjustment program, is to stabilize agriculture and improve the level of living for as many low-income farmers as possible. This may be accomplished through the relocation of low-income farm families from overcrowded areas which, in turn, will permit the enlargement of remaining units, and also through the integrated use of irrigated and dry-land resources to provide winter feed. The development of new irrigation will furnish the opportunity for making these adjustments.

The adjustment program undertaking in Dawson County, Montana, illustrates the principles and program involved. Approximately 15,000 acres of irrigated land are being developed along the Yellowstone River in this area, known as the Buffalo Rapids Project, Division No. 1. Construction was originally started by the Bureau of Reclamation during the worst of the drought and depression, with the help of labor provided by the Works Projects Administration. It was undertaken to provide work relief for distressed farmers in Eastern Montana and to develop irrigation resources. In 1940 an extension of the development was approved and the project included in the Water Conservation and Utilization program.

The history of Dawson County is much the same as that of the Great Plains in general. Favorable precipitation and rising prices encouraged the settlement of the county between 1905 and 1920. The first homesteading was in 160-acre units, but in most cases the size was 320 acres. Agricultural development progressed rapidly until 1920, received a minor setback in the early 1920's, and reached it peak about 1920.

During the decade 1930–1940, drought and depression brought drastic changes. Frequent crop failures occurred, total land in farms and crops decreased and the acreage of idle, fallow and failure increased. There was a material increase in tenancy. Livestock numbers were reduced drastically; cattle and horse numbers by

one-half, sheep by one-third, swine by three-fourths, and chickens by three-fifths. A great deal of livestock was sold at sacrifice prices.

In order to assist with the formulation of an over-all agricultural program and to make the most effective use of irrigation development, Farm Security Administration personnel, under the direction of an economist from the Bureau of Agricultural Economics, started a study of Dawson County. This study was undertaken: (1) to assemble and analyze some of the basic background material to be used by technicians and farmers in planning the dry-land adjustment program; (2) to identify disadvantaged farm families whose participation would probably extend the benefits to be derived from the Water Conservation and Utilization development to the greatest number of farm families; (3) to provide working material to be used in the field in determining adjustment possibilities; and (4) to devise ways and means of effecting adjustments in the relationship of people and resources in the surrounding territory.[5]

A soils map and the experience of Dawson County people indicate that under existing climatic conditions much of the land is suited primarily for grazing. Annual precipitation averages only 14.4 inches and varies widely from year to year. Fourteen inches is barely enough to grow most crops, and serious reduction in yields occurs when this minimum amount is either not received or not properly distributed. Annual precipitation for a 50-year period, 1890 to 1939, varied from 7.01 to 24.26 inches. In 27 of these 50 years it was less than 14 inches, and in 17 years less than 13 inches.

The records for Dawson County indicate that in 100 years, precipitation of 19 inches or more may be expected for 14 years; 15 to 18 inches, 26 years; 12 to 14 inches, 32 years; and less than 14 inches, 28 years. It is, of course, impossible to know whether dry years will be distributed evenly with wet years.[6] For this reason it

[5] Most of the information was obtained from secondary sources because of limitations of time and funds. Sources were: the Agricultural Adjustment Administration, the Farm Security Administration, the Work Projects Administration, the Farm Credit Administration, the United States Census, the United States Weather Bureau, and the Dawson County Welfare Board, Superintendent of Schools, and Assessor. Local people also provided a great deal of valuable information.

[6] See James L. Paschal, Aaron G. Nelson, and Olav Rogeness, Planning Minimum Sized Farms for the Beadle County Area in Central South Dakota, January, 1940, Bulletin 341, Department of Agricultural Economics of the South Dakota Agricultural Experiment Station and the Bureau of Agricultural Economics; also Delbert C. Myrick, Climate, the Limiting Factor in Hand County Agriculture, June, 1941, U. S. Department of Agriculture, Bureau of Agricultural Economics in Cooperation with South Dakota Agricultural Experiment Station.

is of the utmost importance that there be developed an agricultural economy flexible enough to meet the shocks of drought and to take quick advantage of favorable precipitation.

The study indicated that 183 farm operators (about 20 percent of the total) left their homes during the period 1935 to 1939. The average size of farm increased from 961 to 1,131 acres, but this increase was largely among units which were already adequate. Various forms of public assistance were made available to farmers, but even then many were unable to retain possession of their land. During the 5 years 1935 to 1939, inclusive, outside income received by the 819 operators who were in the county in 1939 totaled $1,528 per operator. Of this, direct relief and Work Projects Administration aid totaled $607, emergency loans $199, and Agricultural Adjustment Administration payments $722 per family. These 819 operators received a total of $1,251,077.65 in public funds. These payments do not include money paid to landlords, nonresident operators, or operators who left the county during this 5-year period. It is estimated that all Federal payments for the decade beginning in 1931 amounted to $2\frac{1}{2}$ million dollars, or approximately $3,000 for each operator residing in the area in 1939.

With the exception of construction work on the Buffalo Rapids irrigation project, relatively little correction of basic difficulties was obtained from the public funds expended in Dawson County. This, of course, does not deny that a worthy purpose was served in providing the necessary direct emergency relief.

Material obtained from the study was prepared in statistical and map form suitable for use in discussion meetings and was studied by technicians and local people. After the basic information had been presented and discussed at farmer planning meetings, the county was divided on a judgment basis into four probable "best land use areas." Areas 1, 3 and 4 were classified as suitable primarily for grazing. Area 2 was classified as being suitable for cash-crop farming, but the general consensus of experienced operators was that livestock enterprises should form a substantial part of the farming system even in this area. Actually, many operators had little livestock or land to carry the quantities recommended.

In areas 1, 3 and 4 there was a great deal of tax delinquency, tenancy, and other evidences of a disintegrating farm economy. A large percentage of the units were far too small. Many of them, although operated primarily as cash-crop farms, were definitely not

suited for crop production. A large percentage of the operators did not have an assured supply of winter feed. The buildings on many units were poor and inadequate. Approximately one-half of the operators were 50 years or more of age.

It was generally agreed by technicians and farmers that the submarginal cropland should be returned to grass, the operating units enlarged to adequate size, and arrangements made for a regular supply of winter feed. They were in agreement that irrigated land along the river should be used for resettling poorly situated operators from surrounding areas. Also, that the grazing areas without adequate resources for growing winter feed should be used in connection with the irrigated land.

It was estimated that 1,000 family-size, stable operating units could be properly established in Dawson County. Approximately 24,000 acres of land along the Yellowstone River can eventually be irrigated, and several thousand acres in coulees in the upland could benefit from flood irrigation. However, the development of these resources and the stabilization of the entire county through the integrated use of irrigated and dry land can be accomplished only if major land use adjustments are effected.

The first settlers for the irrigated land developed under the Water Conservation and Utilization program were selected from adjacent dry-land farms after careful consideration of the family and after determining that the resources vacated could be used to effect desirable land use adjustments. Families were selected from area 3, immediately adjacent to the project, with the aim of tying the use of the vacated farms to the irrigated land. To accomplish this, the Farm Security Administration made a loan to a development association, made up of operators on the irrigated land, for the purpose of acquiring grazing and vacated dry-farm land.

More than half of the operators in area 3 were 50 years of age or more, and they generally were not considered as eligible for irrigated units. Means therefore had to be devised for effecting the adjustment of their dry-land units. Small tracts of irrigated land were made available to some of these farmers in order to stabilize their operations until such time as they would vacate or sell their lands to the association of irrigation farmers.

Many of the oldest operators cannot be rehabilitated in place with the aid of a feed-base tract, and it will be necessary to find some other method of helping them. It was planned that small,

individual retirement homes be constructed on irrigated land near the city of Glendive in order that these elderly operators might be relocated and their lands acquired by the association.

Conclusions

On the basis of results from previous efforts in making adjustments in the agricultural economy of the Great Plains and on the basis of the material assembled for Dawson County and the recommendations of county planning committees and others, a set of principles and procedures was formulated which, it was felt, would help bring about the needed changes in the area. These, in brief, are as follows:

1. The term "project" means more than just the irrigated land to be developed and includes the entire area within the radius of which the irrigated land can have direct influence.
2. Area adjustment should be carried out within the framework of an over-all agricultural program for the project area. The action of all agencies operating in the area should be effectively coordinated.
3. Local people should participate in planning the basis for the over-all agricultural program of the area.
4. Integration of irrigated, dry-farm and range land should be the primary purpose of developing new irrigated land. There is no justification for building irrigation projects in the Great Plains except on the basis of their being part and parcel of a total area economy.
5. Adjustment of resources and the selection of families for resettlement on irrigated land should start at the project and continue in an ever-widening circle. All settlers on a new irrigation project should come from the immediately adjacent area. This will permit a concentration of adjustment activities in a relatively small area, where some concrete results might be assured.
6. Settlers for the irrigated land should be selected from those whose land resources can be used to enlarge an inadequate farm, or for grazing by an association of operators of family-size units.
7. In order to integrate the use of irrigated and grazing land, provision should be made for an association of operators of irrigated units to obtain grazing land for their cooperative use. This land should be acquired in grazing areas needing a dependable source of winter feed and in submarginal farming areas.
8. Area adjustment is not an event but a process which will require years to complete. Adjustment and land-acquisition plans, procedure and financing should take this into consideration.
9. Subdivision of irrigated lands should be made as flexible as possible. This is necessary because more people may be accommodated as adjustment takes place in the dry-land area and as more grazing land is purchased. The necessary size of the irrigated unit will depend somewhat upon the grazing resources available.

10. Arrangements for the relocation of families involved should be made before adjustments in the dry-land farming pattern are completed.

11. Small retirement homes on irrigated land should be provided for elderly operators who want to sell and vacate their units. If an operator wishes to sell but to remain and temporarily lease his dry-land farm from the association, the necessary authorization should be available.

12. Part of the irrigated land developed should be made available as feed-base tracts for dry-land operators and small ranchers who remain in their present location and who need winter feed to stabilize their operations.

13. Adequate credit should be made available by the Federal Government to finance individual dry-farm operators whose units need enlarging and who do not have sufficient capital to borrow from private or other agencies requiring substantial down payments.

Cooperation and coordination by local people and by all state and federal agencies will be required in order to bring about the development of adequate units and the desired agricultural stability in the Great Plains. As stated in the report of the Great Plains Committee, "All agencies—federal, state, local and private —must cooperate in stimulating the adoption of these and other improved methods. They are a part of the intelligent adjustment to the ways of Nature which must take the place of attempts to 'conquer' her. But primarily the responsibility rests with the people residing in the Great Plains States. Other agencies may encourage, inform and assist them, but the final responsibility is and must be their own."

FOOD ADMINISTRATION EXPERIENCE WITH HOGS 1917–19

WALTER T. BORG*
War Production Board

HOG production had increased in the first two years of the war period (1914–18), but grain prices had advanced more than hog prices during the latter half of 1916 so that early in 1917 the ratio of hog prices to corn prices had become unfavorable for a continued high level of hog production. In a joint release by the United States Department of Agriculture and the Food Administration on August 21, 1917 it was pointed out that the wartime needs for pork and lard were great, but because of the high price of corn relative to the price of hogs, farmers were selling both corn and hogs.[1] On September 1, 1917, the United States Department of Agriculture, in a special survey, estimated that the number of "stock hogs" on farms in the United States was only 60 million head, compared with 65 million head on the corresponding date a year earlier. Furthermore, the price of corn was so high in relation to hog prices as to discourage the feeding of hogs and the breeding of sows for the next spring pig crop. This was an alarming situation in view of this country's pledge to supply food for our Army and our Allies.

Conferences and Recommendations

To solve the question of what should be done to meet the impending shortage of pork and lard, Herbert Hoover as Food Administrator called a number of conferences, the first of which was the meeting of the United States Livestock Industry Committee. This Committee, composed of livestock producers and farm leaders from all over the country, met in Washington on September 5, 6, and 7, 1917, and adopted a number of resolutions which were drawn up

* The standard historical account of the efforts of the Food Administration to increase hog production and stabilize hog prices was written by Frank M. Surface, a former member of the Food Administration, in 1926 and published in American Pork Production in the World War.

In addition to a brief summary of the facts from this book the author presents the viewpoints of the farm journals and others as well as a few points not stressed by Mr. Surface. In the interpretation and presentation of the information regarding the 13 to 1 ratio the author disagrees with the conclusions reached by Mr. Surface.

Credit has been given in the footnotes to basic information secured only from this book. However, quotations and direct reference to original sources have been consulted whenever possible and are cited as authorities in the footnotes.

[1] U. S. Food Administration, Press Release No. 152. Aug. 21, 1917.

by Henry C. Wallace and others.[2] These resolutions dealt with the general livestock problem and recommended that production should be stimulated, that packers should be regulated to prevent speculation, and that the Government should, through a common purchasing agency, pay prices to assure producers a reasonable margin of profit. Regarding hog production the Committee said, "We believe that careful consideration should be given to the establishment of a definite relation between the value of hogs and corn."[3]

On October 3, Gifford Pinchot, then a member of the Food Administration, presided over a meeting of hog producers at Waterloo, Iowa. The producers adopted a recommendation that the Food Administration fix a minimum price for hogs based on a 14 to 1 ratio of hog prices to corn prices at Chicago.[4]

The chief advocate of the ratio method of determining the cost of producing hogs was Henry C. Wallace, editor of Wallace's Farmer. In a letter to Irving Fisher, Gifford Pinchot credited Wallace with proposing this as the best method for determining a price for hogs which would stimulate production "with complete assurance to the farmers of a reasonable profit." Pinchot added: "Unless farmers can be certain that they will not lose money, as they have been doing in vast numbers of cases in spite of the high cost of meat, all the pressure we can bring to bear by exhortation will have no effect."[5]

In a letter dated October 16, Hoover requested the Secretary of Agriculture to state officially the cost of producing pork in terms of corn. He said, "I believe I might get the packers to guarantee this as a minimum price for hogs for the next twelve or eighteen months."

Secretary Houston in his reply to Hoover on October 26 said that it would be unwise to take this action and gave the following reasons: (1) It is exceptionally difficult to determine the cost of producing pork in terms of corn. (2) In some sections hogs are

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[2] The members of this Committee were: H. C. Wallace, Iowa; Dwight B. Heard, Arizona; D. D. Aitkin, Michigan; N. H. Gentry, Missouri; F. J. Hagenbarth, Idaho; G. H. Davison, New York; S. W. Shoemaker, Maryland; E. H. Inwerson, Illinois; and E. K. Middleton, Mississippi.

[3] U. S. Livestock Industry Committee. Resolutions adopted at meeting on September 5, 6, and 7, 1917.

[4] Wallace's Farmer, 42: 1377. Oct. 12, 1917.

[5] Letter dated September 11, 1917. Original in National Archives.

grown principally on other feeds. (3) The close interdependence among hogs, beef cattle, sheep, and other animals makes it impractical to attempt to regulate hog prices independently of other animals. (4) Livestock producers would suspect any intervention by the packers to fix prices, and (5) One of the largest packers was one of the largest grain handlers.

In place of price fixing, Secretary Houston recommended as the only steps which seemed feasible to the people in the Department of Agriculture: (1) Continuation of the efforts of the Department to stimulate production, (2) effective control of the packing plants ". . . as will remedy any of the more serious evils in the purchase and handling of livestock," and (3) extension of the publication of current livestock market information.

In addition the Secretary quoted figures which showed that the situation was not as serious as many believed it to be. The stocks of various pork and meat products were greater than those of a year earlier, and while the number of hogs was less than in 1916 it was greater than in the two years preceding the European war.[6]

Before Hoover received this reply from the Secretary of Agriculture, he appointed a commission of the following to investigate the cost of producing hogs: John M. Evvard, Chairman, Ames, Iowa; Lawrence P. Funk, Bloomington, Illinois; N. H. Gentry, Sedalia, Missouri; W. A. Williams, Marlow, Oklahoma; J. H. Skinner, Lafayette, Indiana; Tait Butler, Memphis, Tennessee; and E. W. Burdie, Herman, Nebraska. Evvard and Skinner were professors in agricultural colleges and Butler was editor of the Progressive Farmer. In their report dated October 27, the Commission stated that ". . . approximately 12 bushels of No. 2 corn is necessary to produce 100 pounds of average live hogs under average farm conditions. . . . The normal number of hogs in the United States is approximately 65,000,000 as contrasted with the present supply of 60,000,000. To bring swine production back to normal, the Commission believes that it will require a stimulative market which will pay at least the equivalent value of 13.3 bushels of corn for 100 pounds of average hog. We further believe that the equivalent value of at least 14.3 bushels of corn must be paid for 100 pounds of average hog in order that production may be stimulated 15 per cent above the normal."

[6] Letters on file in National Archives.

The Commission further recommended that, "The best emergency method of stabilizing the market and preventing the premature marketing of light, unfinished pigs and breeding stock . . . is to establish immediately a minimum emergency price for good to select butcher hogs at $16 per hundred pounds on the Chicago market.

"Chicago is a basic market for corn and hogs. Therefore we recommend that Chicago be used as the basis in any price stabilization. . . . The present ratio . . . shows that on the basis of Chicago No. 2 corn and Chicago average hogs 100 pounds of average hog is selling for the low value of practically 8.8 bushels of corn. . . ."[7]

Minimum Price for Hogs Announced by the Food Administration

On November 3, 1917, J. P. Cotton, then Chief of the Meat Division, announced the policy of the Food Administration relative to the price of hogs.[8] The announcement stated that the main purposes of the Food Administration were to assure fair prices to the hog producers, to increase hog production, to limit the profits of the packers, and to eliminate speculation. The price support for hogs promised by the Food Administration is given in the following quotation from the announcement.

"The first step is to stop the sudden break in prices paid for hogs. . . . The prices so far as we can affect them will not go below $15.50 per hundredweight for the average of packers droves on the Chicago market until further notice.

"We have had the advice of a board of practical hog growers and experts. That board advises that the best yardstick to measure the cost of production of the hog is the price of corn. . . . The ratio of corn price to hog price on the average over a series of years has been about 12 to 1. . . . That board has given its judgment that to bring the stock of hogs back to normal under present conditions the ratio should be about 13. Therefore, as to the hogs farrowed next spring (hogs farrowed in the spring of 1918 to be marketed the following fall and winter), we will try to stabilize the price so that the farmer can count on getting, for each 100 pounds of hog ready for market, 13 times the average cost per bushel of corn fed into the hogs.

"Let there be no misunderstanding of this statement. It is not a guarantee backed by money. It is not a promise by the packers. It is a statement

[7] U. S. Food Administration, Meat Division. Hog and corn ratios. Chicago, 1917.
[8] U. S. Food Administration, Meat Division. Prices of hogs, statement of Joseph P. Cotton, November 3, 1917. Chicago, 1917.

of the intentions and policy of the Food Administration which means to do justice to the farmer."

This announcement was given wide publicity, and in general farmers were well satisfied with it. However, a few misunderstood and thought the support level for hog prices based upon a 13–1 hog-corn price ratio was to go into effect immediately (November 1917). At the time of the announcement, the average price for hogs at Chicago was about $17.50 per 100 pounds and the average price of corn at Chicago was a little over $2.00 per bushel.

Price Support Based upon Government Purchase of Hog Products

In its announcement of the above program, the Food Administration pointed out that the hog prices would be maintained through the control which that agency had over the buying of the Allies, the Army and Navy and other agencies. This was based on the authority granted by the Food Control Act to the President, which he in turn delegated to the Food Administration.

Prior to the entry of the United States into the war, the Allied Governments had entered into a series of agreements by which all buying in this country was placed in the hands of a single agency known as the Allied Provisions Export Commission, usually referred to as the "APEC." Hoover arranged that this agency would submit all of its orders for pork and pork products to the Food Administration for allotment to the packers at prices specified by the Food Administration. It was understood that these prices would be high enough to enable the packers to maintain the minimum prices for hogs. Similar arrangements were made with the United States Army and Navy, the Commission for the Relief of Belgium, and the American Red Cross. To enforce these agreements the War Trade Board required that all applications for export licenses had to have attached a certificate indicating that the products described had been sold at a price approved by the Food Administration.[9]

Hoover then entered into voluntary agreements with the packers by which they undertook to maintain the minimum price set by the Food Administration with the understanding that they were to be paid prices giving them a fair profit. These argeements were maintained through the Packers' Committee. The licensing and control

[9] Frank M. Surface, American Pork Production in the World War. Chicago, 1926, p. 41.

of the packers is another phase of the wartime control measures which has no direct bearing upon the subject of this report.

Difficulties Encountered in the Price-Support Program

Hog prices advanced sharply in November 1917 following the announcement by the Food Administration of its price-support program. But hog marketings were increasing seasonally, and prices began to decline. On January 26, 1918, the daily average at Chicago dropped to $15.55, the lowest for the whole period that the minimum price of $15.50 was in effect. Total marketings of hogs during December and January were not particularly great, however, and an important factor responsible for the price decline appears to have been the chaotic condition of the marketing and transportation system during the winter of 1917–1918. The increased demands of the war industries and the Government caused a severe strain on the railroads, a situation which was not remedied until late in the winter after a Coordinator of Railroads had been appointed.

Mondays and Tuesdays had always been heavy marketing days for livestock and in order to spread marketings more evenly over the entire week, the Food Administration, with the cooperation of the railroads, set up marketing zones around Kansas City on November 12, 1917. This system apparently was quite successful and was adopted for the Chicago area on December 10. The Food Administration ordered that hogs produced within a radius of 300 miles of Chicago should be marketed on Tuesday, Thursday, and Friday, and those outside this zone on the other days.[10] However, the system was not entirely successful at Chicago, and on December, 18 Cotton issued an urgent plea to producers to hold back their hogs because of the glut on the market.[11]

Editors of livestock and farm journals approved of the principle of distributing marketing more evenly during the week, and the head of the Kansas City Livestock Exchange was wholeheartedly in favor of it after a month's trial. However, according to the Breeder's Gazette, the application of the zone system worked havoc at Chicago. It moved the market glut from Monday to Tuesday and

[10] U. S. Food Administration, Press Release No. 513. Dec. 6, 1917.
[11] Ibid., No. 542. Dec. 18, 1917.

Thursday.[12] Edward F. Keefer, President of the Illinois Livestock Association, said " . . . the principal effect of the zone system of marketing has been to cause the most unstable market ever in Chicago. This was caused by the fact that the Tuesday-Thursday zone included 75 percent of the stock shipped to Chicago."[13] In February, the zones were adjusted in an effort to overcome this difficulty and later the system was abandoned.

The 13 to 1 Controversy

Hog prices advanced gradually during the winter and spring of 1918 averaging about 17¢ a pound at Chicago. After a slump in June, prices began to rise because of the lull in marketing. F. S. Snyder (successor to Cotton as Chief of the Meat Division of the Food Administration) explained the actions of the Food Administration during the summer of 1918 in an address to agricultural advisors and packers on January 28, 1919, as follows: "I think many of you will agree that it looked dangerously as though hogs were going to reach 25¢ a pound. When they did, as a matter of fact, almost strike 21¢, we made every effort we could to stem that upward tide. . . . We withheld the European orders and thus choked back the demand upon the supply. Coupled with that act of ours, the increase in hogs began to show on the market. . . . That combination of circumstances, including withheld orders and the increase in supply of hogs, turned the tide, and the market began to decline."[14]

In September the market movement of the 1918 spring pig crop would begin. It was on these that the Food Administration had promised a price of 13 times the cost of corn. With the price of corn at Chicago in August at about $1.75 per bushel, farmers thus would be entitled to a very high price for hogs.

With this situation in prospect, F. S. Snyder called the Livestock Subcommittee of the Agricultural Advisory Committee to Washington. This Committee was headed by H. C. Stuart (former Governor of Virginia and President of the Stuart Land and Cattle Company) and was made up of agricultural leaders from various sections of the country. In addition to the regular members of the Livestock Subcommittee, Stuart invited other men to participate in the Septem-

[12] Breeder's Gazette, 73: 23. Jan. 3, 1918.
[13] Prairie Farmer, 90: 87. Jan. 26, 1918.
[14] Remarks of F. S. Snyder at meeting of Agricultural Advisory Committee and Packers on January 28, 1919. Stenographic report at National Archives.

ber meeting. Among them was John H. Evvard, professor of the Iowa State College, who had participated in formulating the original plan to support hog prices at a fixed ratio relative to corn prices.[15] The purpose of the meeting was to consider ". . . the commercial methods to be pursued by the Administration in the interpretation of the policy outlined on November 3, 1917, with regard to the price of hogs."

This policy had been announced by Cotton in which he stated that "the farmer can count on getting, for each 100 pounds of hogs ready for market, 13 times the average cost per bushel of corn fed into the hogs." Surface states that "what was meant was that the Food Administration would try to adjust its minimum price at Chicago and other large markets so that . . . the price at that market would bear some such relation to the *average farm price* of the corn fed into these hogs."[16] However we have seen that the Commission appointed to investigate the cost of producing hogs recommended that the price of Chicago No. 2 corn be used as the basis of the price stabilization. Certainly the statement of Cotton could be interpreted to mean the farm price of hogs would be 13 times the farm price of corn or that the Chicago price of corn would be used to compute the Chicago price of hogs."

In an article in the Prairie Farmer for November 14, 1918, Evvard revealed that the actions of the conference were dictated by Hoover, who stated flatly that the support price for hogs in October would have to be below $20.[17] He proposed that it be computed on the basis of 13 times the average cost of producing corn on the farm. A compromise was finally reached with the Food Administration agreeing to change this from the cost of producing corn on the farm to the farm value of corn in the eight leading corn and hog-producing states.

The Committee acceded to the wishes of Hoover and on Septem-

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[15] The following were present at the meeting: F. J. Hagenbarth, Spencer, Idaho; H. C. Stuart, Elk Garden, Virginia; Eugene Funk, Bloomington, Illinois; N. H. Gentry, Sedalia, Missouri; W. L. Brown, Kingman, Kansas; Isaac Lincoln, Aberdeen, South Dakota; John Grattan, Broomfield, Colorado; C. W. Hunt, Logan, Iowa; J. H. Crockett, Wytheville, Virginia; J. H. Mercer, State House, Topeka, Kansas; W. H. Tomhave, State College, Pennsylvania; J. G. Brown, Monon, Indiana; J. C. Crawley, Lawson, Missouri; Professor J. H. Skinner, Lafayette, Indiana; S. P. Houston, Malta Bend, Missouri; A. Sykes, Ida Grove, Iowa; and Professor John Evvard, Ames, Iowa.

[16] Surface, American Pork Production, pp. 189–190.

[17] John M. Evvard. John Evvard's Story of the Hog Price Conference: Prairie Farmer, 90: 1009. Nov. 16, 1918.

ber 25, 1918, made the following recommendations: (1) It is in the " . . . fundamental interest of the producer and consumer that both extreme high and low prices should be guarded against." (2) The policy should include a " . . . definite price basis in advance from month to month." (3) The "average cost per bushel" for determining the price of hogs should be interpreted as the "farm value of corn" in the eight leading corn and hog-producing States for a period of 5 months preceding marketing. (4) On this basis the support price for October would be $18.50 at Chicago. (5) "The Food Administration should announce its intention to maintain the minimum price of not less than $15.50 continuously during the war."[18]

The average price for No. 2 Yellow corn at Chicago during the 5 months, May–September 1918 was about $1.60 per bushel, compared with the farm price in the eight leading corn-hog States of about $1.40. Thirteen times the farm price for corn gave a Chicago price for hogs of about $18.50 or $2.50 below the price calculated on the basis of the Chicago price for corn. As reported by Evvard, the Food Administration claimed that this was the best it could do.

In a letter to Stuart, which was released to the public on October 2, Hoover announced the following as the eight leading corn and hog producing states: Iowa, Illinois, Indiana, Ohio, Nebraska, Missouri, South Dakota and Minnesota.[19] And on the following day (October 3), after a conference with packers, the Food Administration announced that the minimum price for hogs, excluding throwouts at Chicago during October would be $18.00.[20]

The Food Administration was severely criticized for naming Minnesota and South Dakota as leading corn and hog-producing States when Kansas produced about as much as these two States together. Critics contended that the reason for naming South Dakota and Minnesota as principal corn and hog-producing States was that the price of corn was about 30 cents a bushel less in these two States than in Kansas, and this would lower the average price for corn upon which the support price for hogs was to be based.[21] The corn-hog ratios on the basis of these eight leading corn and hog producing States and on the basis of No. 2 Yellow corn at Chicago are as follows:[22]

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[18] U. S. Food Administration, Press Release No. 1217. Sept. 25, 1918.
[19] U. S. Food Administration, Press Release No. 1224. Oct. 2, 1918.
[20] Ibid., No. 1226. Oct. 3, 1918.
[21] Wallace's Farmer, 43: 1408. Oct. 4, 1918.
[22] Surface, American Pork Production, p. 189.

	Eight States	*Chicago Prices*
October 1918	12.1	12.6
November 1918	14.4	12.8
December 1918	14.3	12.1
January 1919	13.1	12.4
February 1919	13.9	13.6
March 1919	15.4	12.9

Hoover defended the Food Administration's interpretation of the price-support program by pointing out that the farm price for corn was higher than the cost of producing corn, and that the 13 to 1 ratio on this basis gave a higher price for hogs than actually war guaranteed in the November 3 announcement. In his letter to Stuart, Hoover said, "The criticism has been made that in changing the formula from 'cost of corn to be fed to the hogs' to the 'farm value' . . . has the effect of an advance to the farmer, as it realized to him the profits on corn production as well as the profit between the normal amount of corn fed to hogs and the higher ratio here adopted. . . . I am not, however, disposed to quarrel with just profits to the farmer."

However, this argument carried little weight with hog producers, as is indicated by the comments in the farm papers at the time. The Wallace's Farmer in an editorial in the October 11, 1918, issue stated that farmers had been producing hogs at a loss until the fall of 1918. Farmers had responded to the Government's request for increased hog production only to have the Food Administration back down on its bargain.[23] This editorial aroused Hoover to the point that he instructed his State representatives to deny the implication of the editorial. In discussing this subject C. V. Gregory, editor of the Prairie Farmer, headed his article, "Thirteen to One Hog Price Thrown Overboard."[24]

At a meeting of farmers at Lincoln, Nebraska, on October 16, the Food Administration was denounced for fixing the minimum price for hogs at $18.00, $3.50 less than the price promised. As reported in the Nebraska Farmer for October 26, 1918, "Nebraska farmers fed corn worth $1.70 to hogs which will now sell for $16.00 or about 9 to 1. It is also proposed that instead of taking the price of corn at Chicago, the price of corn at the farm will be taken. This juggling will make a difference of from 50 cents to a dollar in the support price for hogs."[25]

[23] Wallace's Farmer, 43: 1460. Oct. 11, 1918.
[24] Prairie Farmer, 90: 901. Oct. 19, 1918.
[25] Nebraska Farmer, 60: 1459. Oct. 26, 1918.

Packers did not maintain the minimum price of $18.00 set for October. Hog prices declined steadily during the month, reaching $16.25 for the week ended October 26. The daily average at Chicago dropped to $15.85 on October 24. This critical situation led to the calling of another meeting of the Livestock Sub-Committee of the Agricultural Advisory Committee in October 1918. In addition to hog producers, a number of leading packers attended the meeting. Louis D. Hall and F. R. Marshall represented the Department of Agriculture.

The report of the Committee, released on October 26, pointed out that the entire marketing situation had changed because: (1) The peace talk had caused a decline of 25–40 cents in corn prices. (2) There were huge accumulations of low-priced corn in Argentina and South Africa. (3) These factors had caused a fear of a decline in hog prices. (4) The supply of hogs had increased. (5) There was a heavy marketing of hogs. (6) Some packers had not maintained the October price, and (7) The influenza epidemic had curtailed consumption. However, the situation was not entirely unfavorable because exports had increased over a year earlier, the domestic demand for pork was strong, and there were good prospects for a large demand in Europe after the war was over. The Committee concluded that, "In the light of these circumstances, . . . attempts to hold the price of hogs to the price of corn may work out to the disadvantage of pork producers."[26]

Although this meeting resulted in the abandonment of the support price for hogs based upon the 13 to 1 formula, a plan was worked out whereby hog prices would be maintained at the highest possible level consistent with the support which could be given by the Food Administration through its control of export orders. For the month of November, packers agreed to purchase hogs at Chicago at not less than the daily minimum of $17.50 for average packer droves, excluding throwouts. Swine producers were asked to cooperate by not flooding the market. On November 14, it was announced that the November minimum price would continue through December.[27] Because of the influenza epidemic, the Railroad Administration had been requested to place an embargo on shipping of hogs except by permit. This embargo was lifted on December 5, and

[26] U. S. Food Administration, Press Release No. 1269. Oct. 26, 1918.
[27] Ibid., No. 1307. Nov. 14, 1918.

the November and December price was continued for January.[28] Later the same price was announced for February.[29]

The plan for stabilization of the hog market was supervised by a commission of packers, livestock commission men and the Bureau of Markets, with representatives at each market to see that details were faithfully carried out. Any violations were to be reported to the Food Administration. The following is a list of the differentials used at the markets mentioned below on a basis of the Chicago price: Cleveland, plus 25¢; Indianapolis, plus 20¢; Pittsburgh, plus 30¢; Detroit, plus 25¢; Buffalo, plus 30¢; Cincinnati, plus 25¢; Toledo, plus 25¢; St. Louis, minus 10¢; St. Joseph, minus 50¢; St. Paul, minus 50¢; Omaha, minus 50¢; Sioux City, minus 50¢; Wichita, minus 50¢; Kansas City, minus 40¢; Sioux Falls, minus 50¢; and Milwaukee, Chicago basis.[30]

An examination of the weekly average prices of hogs at Chicago reveals that the prices hovered at just a little above $17.50 during the 4 months November 1918–February 1919 but never dropped below that level.

Post-War Problems of Price Support

On November 11, 1918, the war ended, but not Hoover's pledge to maintain a minimum price for hogs, because the market movement of the 1918 spring pig crop was barely under way. The post-war problem was serious. The promise of price support had led to a large increase in production. Buying of pork and lard by the Food Administration before November 11 was based on a continuation of the war with almost unlimited demands. Because of the submarine menace the Allies wanted to build up stockpiles, and the requirements of the Army were increasing steadily. But with the war ended, the situation changed. The Allies cancelled their January orders. Germany was blockaded, and although it was agreed that she needed food, none was to be furnished until peace negotiations were more fully developed. Hoover proposed that the neutrals be permitted to increase their purchases for re-sale to Germany, but this was rejected. F. S. Snyder of the Food Administration estimated that this situation resulted in a monthly surplus of 400 million pounds of

[28] Ibid., No. 1338. Dec. 4, 1918.
[29] Ibid., No. 1378. Jan. 28, 1919.
[30] National Provisioner, 59(18): 15. Nov. 2, 1918.

pork and lard needed to be exported in order to maintain hog prices. Mr. Snyder estimated that there was a surplus of 400 million pounds of pork produced each month during the winter of 1918–19 which was needed to be exported to maintain prices.

In December Hoover ordered the Grain Corporation to buy up to 50 million pounds of pork and lard, in addition to previous orders. He placed increased orders through the Belgian Relief Commission to the extent of 20 million pounds. He secured the reinstatement of the French and Italian orders to the extent of 200 million pounds. During January and February Hoover purchased approximately 250 million pounds, which were resold to Germany during the spring and summer of 1919.[31]

The ability of the Food Administration to fix a minimum hog price was based on its purchasing power and its control of the price of all pork and pork products exported. This control was based on a requirement of the War Trade Board that certain commodities must have a certificate stating that the product had been sold at a price approved by the Food Administration. On March 5, 1919, the War Trade Board rescinded this requirement, thus ending the control of the Food Administration over hog prices.[32]

The Food Administration had hoped to support prices until March 31 when most of the hogs farrowed in the spring of 1918 would have been marketed and its obligation fulfilled. However, by the end of February 1919, the need for price-support measures was practically over. The war had left Europe destitute, with no prospects for food until the following harvest. With export restrictions being lifted, these huge demands required larger supplies. Great Britain had curtailed its buying in January and February and in March needed to enter the market again. In addition, hog marketings were decreasing seasonally. After control ended the price rose steadily, until July, when the high of $22.70 for the average of hogs at Chicago was reached on July 31.

In evaluating the policy of the Food Administration, credit must be given for contributing incentive to expanding production, which was what was demanded by the Allies and the military experts. However, the Food Administration did not fulfill its obligation to

[31] Frank M. Surface, American Pork Production in the World War. Chicago, 1926, pp. 81, 83, 88, 95, 148. Remarks by Mr. Snyder at meeting on January 28, 1919.

[32] U. S. Food Administration, Press Release No. 1395. March 5, 1919.

support prices for the 1918 spring pig crop at thirteen times the price of corn, which had been promised in the statement of November 3, 1917. How the sharp decline in hog prices during October 1918 could have been prevented is open to question. Undoubtedly the Administration contributed to a stabilization of prices in the few months following the armistice, in the interim between the cessation of purchases by the Allies and the resumption of a large volume of exports to a reopened European market.

COLLECTIVE BARGAINING IN GERMAN AGRICULTURE UNDER THE WEIMAR REPUBLIC, 1918-1933[1]

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COLLECTIVE bargaining as a procedure for concluding employment contracts between management and labor came into increasing use in Germany, in the later part of the nineteenth century. Rapid industrial expansion accompanied by an increasingly marked tendency towards concentration and combination has greatly accelerated its extension in German industry.

This growth was considerably retarded in agriculture. The slow development of trade unionism and collective bargaining in agriculture is partly due to the nature of the industry, the type of labor employed, the position of that labor force, and the legal impediments restricting freedom of association.

In Germany we may distinguish roughly the three following distinct patterns of farm organization: areas of small, intensively cultivated farms relying upon family labor primarily or exclusively, then areas of middle-sized farms employing a considerable amount of outside labor, particularly during the peak season, and finally the area of numerous large estates in Eastern Germany.

The growth of farm labor organization was impeded in these areas for various reasons. The preponderance of a large number of relatively small farm units each employing only a few workers, created certain special problems in organization. To reach these small isolated groups of laborers and organize them into locals presents a difficult task. Much of the labor force on such farms was recruited from members of the farmer's family, frequently not working for wages, but sharing in the farmer's income. Such workers were likely to have stronger ties of economic and social solidarity with the farmer, than with farm labor as a group; more particularly so since most of them tended to look upon their status merely as a temporary one, hoping to climb up the agricultural ladder eventually. Even some of the outside, non-family, wage laborers did not consider their status as a permanent one, but hoped to

[1] This paper is an abstract of a Master's thesis on Agricultural Labor Organization in Germany under the Weimar Republic. Thanks are due to M. R. Benedict C. Landauer, S. v. Ciriacy-Wantrup, and G. M. Kuznets, for their criticism and suggestions.

acquire farms of their own, on a tenancy or full ownership basis.

The position of farm labor on the large estates was vastly different. The status of a land-worker was much more permanent here, there being fewer or practically no opportunities for climbing the agricultural ladder. (Of course, there was a possibility for migration overseas or into industry.) Labor relations on these estates were characterized by strong traditions and paternalistic attitudes of owners towards workers, and by master-servant relationships based on an elaborate system of labor hierarchy.

There were some further difficulties which stifled the extension of collective bargaining in German agriculture. The educational opportunities in many rural areas were rather restricted, resulting in a low educational level of many farm laborers. The type of remuneration received by agricultural workers was also an important factor in this connection. In most areas of German agriculture wages were paid both in money and kind. These payments in kind assumed several forms.

Sometimes a certain share or a fixed amount of the annual farm product would be assigned to the laborer. At other times or in other places the laborer would receive a plot of land for cultivation (Deputatland), on which he could raise various crops for his own household. All these arrangements, while economically advantageous at times, i.e., in periods of monetary inflation, tended to decrease the mobility of the landworker, tying him further to the farm and rendering him more dependent upon it.

However, the most serious obstacles in the way of farm labor unionization were the legal impediments. Guarantees of rights of assembly, association, and combination, while extended to industrial workers, were withheld from farm labor for a long time.

The Farm Labor Unions under the Weimar Republic

The adoption by the German Reichstag of a more liberal code governing freedom of assembly, in 1908, marked a turning point in the status of agricultural labor.[2]

This Act left untouched all State provisions concerning parleys of farm workers and servants for purposes of work stoppage. By implication then, parleys and organization of landworkers for other purposes, were to be governed by the new Federal measure. This

[2] Reichsgesetzblatt, 1908, no. 18.

meant that the formation of various agricultural workers' associations without the right to strike, was made possible.

Availing itself of this greater freedom of association, the Free Trade Union Federation undertook the organization of a farm labor union (the Deutscher Landarbeiterverband), in 1909.[3] This was followed by the formation of a Christian landworkers' union (the Zentralverband der Landarbeiter), in 1912.[4]

It is important to note that these farm labor associations did not spring up spontaneously, on the initiative of the landworkers themselves, but rather were organized by existing trade union federations.

The so-called Free Trade Unions were organizationally and ideologically closely allied with the Social Democratic Party, which had long been interested in winning the agricultural proletariat. These attempts were governed both by political and economic considerations. The agrarian question has preoccupied many of the leading socialist theoreticians in Germany. The dominant feeling was that the economic and technological tendencies in agriculture were leading to developments similar to those to be observed in industry.[5] It was thought that a gradual extension in the scale of operations of individual farm enterprises, and a general movement towards concentration might be expected. This would inevitably lead to the displacement of many peasants, and the further growth of an agricultural proletariat. It was therefore considered vital to organize this farm labor force so as to bring about a political alliance between industrial and agricultural labor.

The growth and extension of socialist trade unionism in the, nineties of the last century, prompted the Catholic circles in Germany to strive for some means by which to check the spread of socialist principles among the working classes. Recognizing that union organization was a concomitant of a rapidly expanding industrial capitalism, these groups decided to build a trade union movement which would have strong religious ties. This Christian Trade Union Federation was strongly supported by the Catholic clergy. It had also close ties with the Center party of the Weimar Republic.

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[3] Report of the Socialist Party Executive Council to the Party Congress in 1909, to be found in Shwarz Solomon's: Handbuch der Deutschen Gewerkschaftskongresse.

[4] Karl Ebermann: Die Landwirtschaftliche Arbeiterbewegung unter besonderer Berücksichtigung der Landw. Gewerkschaften. Tnang. Diss., Giessen, 1929, p. 103.

[5] Karl Kautsky: Die Agrarfrage, Stuttgart, 1899.

Considerations similar to those just outlined prompted the formation of a farm labor union under the aegis of the Christian Trade Unions.

The D.L.V. (Deutscher Landarbeiterverband) had a membership of about 4,700 in the first year of its organization. This number increased to 22,500 on the eve of the first World War. The Z.d.L. (Zentralverband der Landarbeiter) on the other hand started with a membership of around 2,500, which increased to 3,500 by 1914.[6]

The organizing activities of both of these farm labor unions were financed almost entirely by their respective trade union federations. Due to the severe legal impediments and extreme opposition by agricultural entrepreneurs, the scope of activities of these organizations was extremely limited during the life of the imperial regime. They were forced to assume the character of a benefit and legal protection society for farm labor. Landworkers and their organizations were prevented from undertaking any strike or wage movements.

The fall of the imperial regime and the shaping of the Weimar Republic led to a very rapid transformation of these farm labor unions. Their small organizations developed into vast and powerful bodies.

The extent of this growth may best be illustrated by noting the expansion in the membership of these unions. The D.L.V. had about 8,000 members just before the revolution, in November, 1918. By the end of the year this number was doubled, and by the end of 1919 it rose to 624,000. That is within the space of one year, union rolls swelled to thirty-nine times their former size. A peak membership of 773,000 was reached in June, 1920. At first a decline, and then a precipitate drop set in, so that the size of the union shrank to a low of 102,000 by the end of 1923.[7]

It has been estimated that from the time of the revolution, until the end of 1920, more than one million members joined the union.[8] This figure would indicate that there was a considerable turnover in membership, many landworkers remaining in the organization only a very short time.

The reasons for this remarkable, but short-lived spurt are numerous. One of the first acts of the new regine was to remove all legal restrictions impeding the right of agricultural workers to combine.

[6] Karl Ebermann: Die Landwirtschaftliche Arbeiterbewegung, Giessen, 1929, pp. 75 and 115.

[7] Karl Ebermann, p. 76.

[8] Correspondezblatt der Gewerkschaften Deutschlands, vol. 31, no. 39, 1921, p. 548.

The annulment of the State Servants' Codes (Gesindeordnungen) was particularly significant in this connection. These codes applied to all those engaged in agriculture, and in the rural or urban household, on a permanent contractual basis for a year or more.[9] The Codes imposed severe penalties upon all who broke their contract and stopped working "without a sufficient reason," or who were disloyal and disobedient. Freedom of association was thereby effectively ruled out.

The traditional and accepted labor relations in important areas of German farm production were characterized by autocratic and paternalistic attitudes. The link between estate owner and laborer was not merely governed by economic considerations, but by differences in political and social status as well. Ideas of independent labor organization seemed hardly conceivable or comprehensible in such a setting. However, the net set of circumstances did prompt the large agricultural entrepreneurs to reconsider their position.

The revolutionary current running through the ranks of the disillusioned and desperate German masses represented a constant threat to the prevailing economic order. Employers, in industry and agriculture alike, preferred to see the workers flocking into the trade union organizations where they would be subject to a certain discipline and stabilizing influence.

The landworkers, on the other hand, seeing themselves freed practically overnight, and fired by an expectation of quickly improving labor conditions and wages, joined the union ranks in large numbers.

The Zentralverband was favorably affected by this new situation too, though not to the same extent. Its membership expanded from about 10,000 at the end of 1918 to a peak of about 103,000 in 1921.

As the revolutionary enthusiasm of the agricultural workers abated, and it became evident that no rapid improvement in farm labor conditions was to be expected, a reaction naturally set in. These tendencies were further fortified by the rapid advance of the inflation which affected particularly those agricultural workers who received money wages largely. Union dues had to be increased constantly, so as to keep pace with monetary devaluation. This created a considerable resentment among union members, and prompted many to discontinue dues payments.[10]

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[9] See "*Gesinde*" in Handworterbuch der Staatswissenschaften, IIIrd ed., vol. IV, p. 732, Jena 1909.

[10] Karl Ebermann.

The membership of the D.L.V. fluctuated between 130,000 and 160,000, that of the Zentralverband between 77,000 and 80,000 between 1924 and 1930.[11] This period of relatively stable membership marks the internal consolidation of the farm labor organizations.

Surveying the organization development, and activity of these unions, one cannot escape the conclusion that the differences between them were primarily ideological and political. In respect to practical trade union policy and collective bargaining their courses were very similar. The Zentralverband had a marked religious and national emphasis, while the D.L.V. was social-democratic in character. Despite a sharp rivalry between the two groups, numerous instances of cooperation may be noted.

It should be mentioned that there were some other farm labor organizations of lesser importance. The "Landbund," an association of large farm operators and estate owners, proceeded to organize farm labor unions of its own, in order to combat the extension and activities of the D.L.V. and Z.d.L. This "Reichslandarbeiterbund" was financed and controlled completely by the parent "Landbund." It was opposed to strikes and stressed the unison of interests between farm employer and laborer. This organization assumed very much the character of the "company union" in the United States. It succeeded in gathering a considerable membership in some regions, particularly in Pomerania.[12]

Communist farm labor unions played some role, particularly in the first post revolutionary years. Their activity was practically purely political in character.

The Law on Collective Bargaining in the Weimar Republic

The revolution of 1918 brought about radical changes in the economic and legal status of collective bargaining. This concept of settling labor disputes was elevated to a constitutional principle, and the power of the new state and regime was definitely ranged behind it.[13] Very soon upon assumption of governmental powers, the new Council of People's Commissioners issued the *Order about Collective Contracts, Workers' and Employees' Councils and Conciliation of Labor Disputes* of Dec. 23, 1918,[14] which was to govern

[11] Based on data in Gewerkschaftszeitung—Official organ of the General German Trade Union Federation ("Free"), vol. 38–42.

[12] It had 72,000 members in 1922 and about 43,500 in 1925. Reichsarbeitsblatt, Special Supplement No. 52: Jahrbuch der Berufsversbande im Deutschen Reich, 1930, p. 129.

[13] Nathan Reich. Labor Relations in Republican Germany, Ch. II, p. 63.

[14] Reprint of order in Reichsarbeitsblatt, vol. 17, no. 1, pp. 75–78, Jan. 1919.

the evolution of labor relations in the Weimar Republic. The new order revolutionized the nature and importance of the collective bargain by establishing certain basic principles and procedures which prevailed until the rise of the Nazi regime.

The collective contract became the dominant employment agreement, any and all individual contracts, between employer and workingman, being subordinated to it; an individual employment contract, the terms of which were inconsistent with those contained in the collective agreement, was invalid, unless such digressions from collective standards were expressly permitted by the agreement. This provision effectively ruled out any undermining of wage and other standards by individuals. Collective agreements which attained major or overwhelming importance in the shaping of working conditions in an area or an industry, could be declared by the Federal Ministry of Labor as generally binding, for that area or industry. Such a declaration could be issued upon application by either of the contracting parties, or by employer and labor associations whose members would be affected by it. This provision influenced considerably the shaping of labor relations in post-war German agriculture.

Only about 8 percent of the agricultural labor force was organized after 1923,[15] so that the trade unions, just by themselves, could not have exerted a decisive role upon the development of collective bargaining in the country's agriculture. The law, by providing that collective agreements could be declared generally binding, opened the way towards their widespread extension. In this way, the wage and employment conditions of one-third to one-half of all agricultural laborers were governed by collective bargains.

The labor policy of the Weimar Republic was designed to encourage the extension and strengthening of both employer and trade union organization, so as to establish a balance between the respective strengths of the bargaining parties. The actual negotiation, shaping and conclusion of the collective bargain was to be based on voluntary procedures resulting in a free contract between the two parties. State and even trade union policy was directed toward settling labor disputes by peaceful negotiation, without

[15] In 1925 there were 3,292,000 wage workers in German agriculture, according to the Census. The D. L. V., Zentralverband and various dairy and other small unions, not counting the non-militant Reichslandarbeiterbund, had about 260,000 members.

resorting to work stoppages. This consideration was particularly important in such a situation as Germany faced in the post-war period. Incessant and maximum production was a paramount requirement of the German post-war economy; industrial exports were the major means of meeting the staggering international obligations so that long work stoppages would have been extremely costly. With a very delicate post-war food situation the country became sensitive towards strikes in agriculture. The agricultural trade unions were much more interested in averting or stopping strikes, than initiating them.

To meet this situation, there was developed an elaborate system of conciliation, mediation and arbitration to be used as tools for collective bargaining. The order of Dec. 25, 1918, previously mentioned provided for mediation machinery which with some modifications governed conciliation procedure throughout the life of the Weimar Republic. Mediation boards were set up, consisting of two permanent representatives of employers and workmen, one non-permanent representative from each side, and an impartial chairman. The Boards were appointed by the Provincial Governments, on the basis of nominations made by the organizations of employers and employees. The two non-permanent members were appointed for every case separately, and were to be recruited from that industry to which the enterprise, under dispute, belonged. An impartial chairman might be elected by the board from case to case; if the board could not agree on a chairman, the Provincial Government appointed him. The services of the board could be invoked only in case of collective labor disputes, upon request from either the employer or organization of employers, and a worker's council or trade union, if the two parties found that they could not agree. The board itself might, however, institute mediation proceedings on its own initiative so as to bring about a peaceful settlement of a labor dispute. If an agreement was not arrived at, the board would proceed with the formulation of an arbitration award which was to cover all disputed questions. Such an award was to be rendered even if one of the parties did not appear or take part in the board proceedings. This award was not binding upon any of the parties. They were free to accept or reject it.

The above procedure is obviously a combination of conciliation and voluntary arbitration. Though these boards were fairly successful in averting many work stoppages, numerous strikes, sometimes

of a political character, were carried on during the period of economic upheaval between 1918 and 1924. At times vital industries, such as public utilities and agriculture were affected seriously. To meet the situation vigorously and adequately, the government decided upon a greater degree of public intervention in labor disputes. The Presidential Order of October 30, 1923 supplemented and extended the above outlined mediation procedure.[16] It retained the district conciliation boards as appointed by the state governments but it superimposed upon these single federal mediators appointed by the Federal Ministry of Labor. If the conciliation boards were unable to bring about an agreement, the federal mediator was called upon to intervene and attempt a settlement. If his efforts failed also, the board would proceed with the formulation of its award, which might be accepted or rejected by the parties to the dispute. These awards were actually nothing less than proposals for a collective agreement. Should one or both parties reject the award, it still might be declared binding upon the parties to the dispute, "if the settlement contained therein appears just and reasonable with due consideration for the interests of both parties, and if its application is desirable for economic and social reasons."[17] The decision as to whether a settlement appeared "just and reasonable" and whether it was "desirable for economic and social reasons" was to be made by the federal mediator. He could not change or modify the arbitration award itself, he merely could declare the award binding.

The introduction of this feature into the mediation mechanism instituted an element of compulsion, not present before. It should be noted that the compulsory provision was considered as a matter of last resort to be applied if all other methods failed, and only to essential industries and to those in which labor was weak.[18] This obviously had considerable significance for agriculture. Even though the standards set in the compulsory awards might be lower than what the agricultural unions demanded, they were likely to be higher than what the unions could have achieved without state intervention. The element of compulsion is brought into bolder relief, if one considers that an award declared binding for the parties to the

[16] Reichsarbeitsblatt, 1923, no. 22/23, p. 736.

[17] Quoted from the Conciliation Order of Oct. 30, 1923, as reprinted in the Reichsarbeitsblatt, 1923, p. 736.

[18] F. Sitzler, The Compulsory Adjustment of Industrial Disputes in Germany, *International Labor Review*, vol. 12, no. 4, pp. 457–466; Oct. 1925.

dispute became a collective agreement which might be declared generally binding for a large area or a whole industry, if it was of overwhelming importance for the regulation of wages and labor conditions, in that area or industry.

The system of mediation and arbitration dealt with so far was designed to assist in the shaping of future labor conditions for groups of workers. It did not deal with individual differences, but only with collective disputes arising out of negotiations for the conclusion of new collective contracts. For the settlement of individual and collective disputes arising out of existing agreements, special bodies were erected in the form of the so-called labor courts.[19] These were already well established in Germany before the war, but served primarily to settle labor disputes in industry and trade (Kaufmans and Gewerbegerichte), but their scope did not extend to agriculture. In 1926 a Labor Court Bill was enacted to unify and systematize the administration of labor law in Germany, to perfect the procedure used by the pre-war "Kaufmansgerichte," and to extend the scope of the labor courts to all industries theretofore not covered, including agriculture.

The Growth of Collective Bargaining in German Post-War Agriculture

As we have seen employers and workers were on the whole unorganized in German agriculture before 1919, and except for a few isolated agreements, collective bargaining was unknown. Landworkers and farmers alike were accustomed to the traditional methods of hiring and firing, and of setting wage and labor standards. When agricultural labor suddenly acquired full rights, it didn't know at first exactly how to translate these newly won privileges into actual daily practice. The old norms were broken down, and the new ones had not yet had time to penetrate the consciousness and habits of the agricultural population. As a result, a temporary chaos reigned in agriculture in the first post revollutionary months. The government, anxious to insure unhampered production of foodstuffs, endeavored to bring about cooperation between farm employer and labor groups. With this objective in mind, at the end of November 1918 a "*Federal Council of Farmers and Landworkers*" was formed, consisting of the German Agricul-

[19] H. Siefart, The Administration of Labor Law in Germany, *International Labor Review*, vol. 15, no. 6, pp. 868–887, June 1927.

tural Council, the Federation of Farmers, the German Peasants' Federation, the Association of German Peasants Societies, the General Union of Dairy Workers, the D.L.V., the Zentralverband, and the Association of German Estate Officials.[20] This Council then worked out the Provisional Agricultural Labor Code of January 24, 1919 which exercised a decisive influence upon agricultural labor relations, until 1933. This Code may be considered as the first major collective agreement in German Agriculture; it assumed the character of a "Reichsmanteltarif," that is a federal covering agreement which did not attempt to make detailed provisions concerning wages and working conditions, but rather established certain general principles which were to be adhered to in the conclusion of local or district contracts.

With the rapid growth of agricultural trade unionism, it became necessary for the farm employers to organize too specifically for the purpose of dealing with labor problems. That is, there were many farmer or peasant societies, agricultural cooperatives and chambers of agriculture, none of which was adapted to dealing with agricultural labor relations. In order to fill this gap, a "Federation of Agricultural and Forestry Employers' Associations" was organized; the specific purposes of the new organization were to represent the employer interests, to deal and cooperate with farm labor organizations and public authorities, and to prevent "outlaw" strikes.[21]

A further and very significant step towards strengthening of collective bargaining in agriculture was taken with the formation of the "*Federal Joint Labor Association* (Reichsarbeitsgemeinschaft) *of Agricultural and Forestry Employer and Worker Federations*," in February of 1920. Various provincial and district joint labor associations were affiliated with this federal body. It was the general purpose of the Association to promote understanding and cooperation between employers and workers, concerning all questions affecting agricultural labor relations. Its specific tasks were to further the spread of collective bargaining, to enlarge and improve the labor mediation machinery, and to cooperate with the executive and legislative authorities in the public regulation of agricultural

[20] Reichsa beitsblatt, vol. 17, no. 2, pp. 160–161, Feb. 1919.

[21] John Feig, The Right of Association among Agricultural Workers in Germany, *International Labor Review*, vol. 4, p. 481.

labor relations.[22] The Joint Labor Associations established, also, certain broad rules and principles which were to govern labor conditions in various areas. Following the first couple of years of relatively productive cooperation and activity, the Association gradually lapsed into oblivion, until it was finally dissolved, because of increasingly sharp and bitter conflicts between the two parties. Though the Federal Association ceased to function, certain State and Provincial Joint Labor bodies continued their activities, particularly in Central Germany where collective bargaining was more firmly established than in any other part of the country.

At first, when both parties were still inexperienced, most of the labor agreements in agriculture were rather detailed documents concluded between an individual employer and the union, and concerning primarily wage questions, leaving employment conditions unregulated. With a further extension of collective bargaining, and strengthening of agricultural employers' organizations after 1920, there was developed a very elaborate system of collective agreements in German agriculture.

The agricultural trade unions and public authorities were striving to introduce a certain uniformity into these agreements over wide areas and yet take into consideration local variations in agricultural production and labor conditions. Uniformity was necessary to facilitate the conclusion of collective agreements and to prevent undermining of wage and employment standards in agriculture. In order to achieve a compromise between uniformity and local variation, several types of agreements were concluded. For a wide area such as a State or Province, there would be in operation a so-called "Manteltarif" or "Rahmentarif," that is, a covering agreement establishing the general principles upon which district and local agreements were to be based. Such a "Rahmentarif" was then supplemented by district agreements (Bezirks and Kreistarife) in which were to be found more detailed outlines of wage and employment conditions. Very frequently supplementary agreements were concluded for individual enterprises (Betriebsvereinbarungen) by which the district agreements were adapted to conditions prevailing on individual farms. For many areas there were no covering agreements so that working conditions were entirely regulated by the district contracts.

[22] K. Ebermann, p. 58.

As to their content, one may distinguish two types of labor contracts in German agriculture, the so-called "Volltarife" and the "Lohntarife." The first were full-fledged collective contracts containing detailed regulation of wages and employment conditions; the latter related to wages only. This type of contract came into wide use during the inflationary period, when it became absolutely necessary to separate monetary wage setting from the regulation of other employment conditions.

The most frequent and widespread types of agreements were the district "Volltarife" which covered the vast majority of workers in forestry and agriculture. District wage agreements (Lohntarife) were however quite important also. The accompanying table will serve to show the relative importance of the various kinds of collective labor contracts.

TABLE 1. TERRITORIAL SCOPE OF COLLECTIVE AGREEMENTS IN GERMAN AGRICULTURE

Date	*Collective agreements for:* No. of agreements	No. of establishments	*Individual Firms* Covering No. of workers
Jan. 1, 1927	80	138	5,583
Jan. 1, 1928	81	135	5,249
Jan. 1, 1929	84	151	7,919
Date	*Collective agreements for:*		*One locality*
Jan. 1, 1927	23	442	5,310
Jan. 1, 1928	21	494	5,314
Jan. 1, 1929	15	200	4,045
Date	*Collective agreements for:*		*One district*
Jan. 1, 1927	210	225,731	1,699,502
Jan. 1, 1928	215	231,875	1,938,854
Jan. 1, 1929	230	258,254	1,771,590

Source: Die Tarifverträge im Deutschen Reich am 1, Jan. 1927, 1928, 1929, Reichsarbeitsblatt, Special Supplement no. 43, 47, 55.

Most of these collective contracts contained provisions governing wage rates, hours of work, vacations and holidays, Sunday rest, housing, filing of notice to leave employment, and mediation of disputes. The regulation of wage rates was rather complex and involved, so that the collective contract had to be very detailed and explicit on this point. Both major agricultural trade unions looked upon the wage rates set by the collective bargain, as minimum rates which would permit outstanding landworkers to earn over and above the minimum. Many of the employers were inclined

however, to convert this minimum into a maximum. Wage setting involved the determination of the total wage, and of the respective proportions to be paid in cash or kind. Frequently the quality and manner of payments in kind had to be determined.

Piece rates came into rather wide use in the post-war period, as a result of many scientific investigations concerning agricultural labor productivity. The trade unions were not opposed to piece rates in principle provided the wages set by collective agreements were maintained as the basic, minimum rates.[23] Many collective contracts provided for mediation machinery, with an equal number of employer and labor representatives, and possibly an impartial chairman selected by the members of the mediation committee. In such instances (where collective agreements did provide for this arrangement), the services of public mediators and conciliators were not invoked unless the mediation machinery as set up in the contract broke down, or was unable to settle the dispute.

Collective bargaining in German agriculture between 1920 and 1930 was marked by a remarkable stability, except for the brief interruption in 1923, which resulted from the abnormal inflation. This stability is evident in the geographic scope, the number of persons covered, and the duration of the agreements.

The stability of collective agreements becomes the more notable if we examine how lasting these contracts were. Of the 329 collective agreements in operation on January 1, 1929, 56 were concluded in the 1919–1923 period, having been renewed from time to time thereafter; a further 22 in 1924, 40 in 1925, 32 in 1926, 35 in 1927, and 144 in 1928.[24] Apparently many of the collective agreements in agriculture were renewed from year to year, and once an agreement had been made it was likely to govern labor relations for a period of several years, even though the actual duration of the contract might be a year or less. This relative permanence becomes understandable if one considers that agricultural employers, trade unions and the general public alike were very anxious to avoid work stoppages in agriculture, so as to insure an uninterrupted production of foodstuffs. It should also be noted that the whole character and content of collective agreements in agriculture were strongly influenced by

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[23] The Science of Farm Labor: Scientific Management in German Agriculture, *International Labor Review*, vol. 15, no. 3, pp. 379–413, March 1927.

[24] Die Tarifvertrage im Deutschen Reich, am 1, Jan. 1928 and 1 Jan. 1931. Reichsarbeitsblatt, Special Supplements no. 55, 58.

customary standards and relationships which had prevailed for a long time, and were being gradually modified.

The overwhelming majority of collective contracts were concluded for a period ranging from 6 months to a year. Some agreements ran for more than a year, while others lasted less than 6 months, but these were few.[25] Most of these agreements were concluded in the spring or fall, that is just before or after the harvesting season.

TABLE 2. COLLECTIVE AGREEMENTS IN GERMAN AGRICULTURE AND FORESTRY

Year	No. of agreements	No. of enterprises covered	No. of workers covered
Dec. 31, 1922	448	307,178	1,996,917
Jan. 1, 1925	207	244,801	1,500,690
Jan. 1, 1926	263	255,499	1,556,006
Jan. 1, 1927	313	226,311	1,610,395
Jan. 1, 1928	317	223,965	1,949,417
Jan. 1, 1929	329	258,615	1,783,564

Sources: K. Ebermann, Die Landw. Arbeiterbewegung p. 88.
I. L. O. Industrial and Labor Information, vol. 4, no. 24.
Die Tarifverträge im Deutschen Reich am 1, Jan. 1929 und 1, Jan. 1931. Special Supplements no. 55 and 58 of the Reichsarbeitsblatt.

The most notable fact about agricultural collective bargaining in post-war Germany is the existence of such a vastly extended network of agreements as compared to the number of agricultural workers actually unionized. It has been pointed out that after 1924, about 1,600,000 or more persons were covered by collective contracts in agriculture, while during the same period only about 230,000 workers were organized in the two major agricultural trade unions. However, some collective bargains were concluded also by the "non-militant" "Reichslandarbeiterbund," particulary in Pomerania. Many of these latter agreements were contested by the D. I. V. and the Zentralverban since they considered this organization as legally incapable (tarifunfähig) to conclude collective agreements.

German labor law practice provided that only a genuine trade union, that is, one which is quite independent of employer control and which follows economic objectives for the benefit of its members and all workers, is in a position to enter into a collective con-

[25] Same as number 23.

tract. The question whether the "Reichslandarbeiterbund" was a genuine trade union or merely a branch of the "Landbund" became one of the most bitterly fought issues before the German Labor Courts. Finally the highest labor tribunal, the Federal Labor Court took the position that though the Reichslandarbeiterbund seemed to be partly controlled by employer groups, it might be considered as an agricultural trade union capable of concluding collective agreements. The various governmental agencies dealing with labor problems did not change their view however, and continued to disregard the Bund.

Even should we count the "Reichslandarbeiterbund," not more than 300,000 agricultural workers were organized in labor unions after 1924. This means that at least five to six times as many landworkers were falling within the scope of collective agreements as had been organized. It must be remembered that agricultural collective bargaining was instituted, on a large scale, between 1919 and 1922, that is, at a time when the membership of the farm labor unions grew by leaps and bounds, reaching even the 800,000 figure. With this tremendous numerical strength, and vigorously supported by public policy, the agricultural labor organizations were in a very strong bargaining position. The majority of agricultural employers under such conditions, did not see any alternative to collective bargaining.

It is a well established fact that collective agreements in most industries, are likely to extend beyond the number of persons directly covered by them. An agreement is concluded between an employer or employers organization and labor union, but the standards set by the collective bargain are likely to apply to all workers who are employed in the enterprises under contract, even to those who are not members of the labor organization. Taking this view, then, it is not surprising to find 1,600,000 agricultural workers covered by collective agreements between 1920–1922 with a trade union membership of 800,000. Once these collective agreements were firmly established, and a mutual spirit of cooperation developed between employers and labor unions, the collective contracts were likely to remain in continuous operation even though the unions were weakened. It must not be forgotten that during the period of revolutionary upheaval, between 1919 and 1923, the trade unions were a stabilizing and even somewhat conservative in-

fluence, checking the strike and wage movements of the workers in agriculture. This policy convinced many farm employers that cooperation with the union might be beneficial.

Collective bargaining in agriculture was not sustained by this spirit of cooperation alone, but also by vigorous public action. By declaring a collective agreement generally binding, the government caused it to apply to a vast number of agricultural workers who were totally unorganized. It is obvious therefore that collective bargaining in German agriculture was a combination of voluntary and compulsory procedures. The starting point would mostly be a voluntary agreement between farm employers and labor organizations; once the agreement was concluded its scope might be extended to employers and workers who did not participate in the conclusion of the agreement, in any way. Of the 317 collective agreements in agriculture in operation on the 1st of January 1928, 83 were generally binding, and at the end of 1929 this number mounted to 97. Practically all of these contracts declared generally binding, were district agreements, that is they applied to a large number of workers.[26]

Most of the collective agreements in German agriculture were concluded between farm employers' organizations on one hand and the two major agricultural trade unions on the other. These agreements marked the termination of a labor dispute, and were arrived at in several ways. They might be entered into after a work stoppage or as a consequence of peaceful negotiation. In either case the agreement could be the result of direct negotiation between the parties concerned, or of proceedings instituted before the mediation board. The conciliation proceedings might result in an award accepted by both parties or in one that was declared binding regardless of acceptance.

Agricultural labor disputes were most frequent, widespread, and most bitterly fought in the periods 1919–1924 and again in 1930–1932. That is in periods of formation and disintegration. In the immediate post-war years cooperative regulation of agricultural labor relations between groups of farm employers and land workers was so untried and new that it was bound to lead to many misunderstandings and sharp conflicts. This tendency was further aggravated by the post-war economic situation. After 1924, a decrease in the number of disputes, but more particularly a change in the

[26] Die Tarifvertrage im Deutschen Reich, am 1, Jan. 1929 and 1, Jan. 1931.

method of settlement is to be observed; while at first strikes were rather frequent, their number and scope decreased rapidly, so that there were no major agricultural strike movements after 1924. The following tables illustrate the developments in this respect:

TABLE 3. AGRICULTURAL LABOR DISPUTES (INCL. STRIKES) IN GERMANY

Year	No. of disputes	No. of enterprises affected	No. of workers affected
1922	1,322	235,052	2,500,000 (approx.)
1923	3,022	239,079	1,714,993
1924	492	277,798	2,371,719
1925	345	196,295	1,711,439
1926	280	340,879	2,749,398
1928	219	289,117	2,123,000
1929	203	243,861	2,365,618

Source[27] I. L. O. Industrial and Labor Information, vol. 8, pp. 223. Gewerkschafts-Zeitung, vol. 37—p. 297, vol. 39—p. 317, vol. 40—p. 351. I. L. O. *International Labor Review*, vol. 15, no. 5, pp. 746–749.

TABLE 4. STRIKES IN GERMAN AGRICULTURE

Year	No. of strikes	No. of enterprises affected	No. of workers affected	No. of manhours lost
1919	163	932	24,955	115,951
1920	366	3,220	56,787	227,168
1921	302	1,876	42,295	353,809
1922	331	2,853	69,093	468,207
1923	70	2,526	159,639	1,521,587
1924	17	596	15,830	137,912
1925	16	32	1,251	?
1926	6	19	369	?

Source: Reichsarbeitsblatt, vol. 6:2 vol. 7:2, p. 267 vol. 6:2 pp. 227–238 and p. 568.

It is evident that agricultural strikes rose in intensity, both in respect to number and duration, between 1919 and 1923, reaching their peak in this inflationary period, only to fall off rapidly after that. The biggest agricultural strike of the whole post-war period was one which occurred in Silesia in the summer of 1923. Fifty thousand landworkers participated in this walkout which was unauthorized by the D. L. V. but since the union was unable to oppose it, it was forced to lead it. As continued negotiations yielded no

[27] Data for 1926, 1927, 1928, and 1929 are only for disputes which the D. L. V. was engaged in while those for the previous years indicate the total number of labor disputes.

results, the union proclaimed a general strike of all landworkers in which from 90,000 to 120,000 persons were involved. The work stoppage lasted for four weeks, despite the fact that the strikers could receive practically no assistance because of the very weak financial condition of the D. L. V. at the time. The strike was finally terminated by an arbitration award rendered under the chairmanship of a special representative of the Federal Ministry of Labor. The workers obtained some wage raises and other concessions; whether these represented real gains in those very uncertain times of rapid monetary depreciation is very difficult to establish.[28]

Most of the man-hours lost during 1924 were due also to an unauthorized strike, this time in East Prussia. After the strikers walked out, the D. L. V. saw itself forced again to take over their leadership. This work stoppage was precipitated by a demand of employers for longer hours and a reduction of wages in kind. The Zentralverband accepted these demands, and concluded a collective agreement on that basis. The collective agreement was then declared binding upon the striking workers as well.[29]

Most of the labor disputes during the whole period of 1919–1933 concerned questions of wages and hours. Practically all strikes were precipitated by these factors.

It becomes obvious that even during this period of violent upheaval and unsettled agricultural labor relations, the majority of disputes were disposed of without resort to work stoppages, by peaceful negotiations and voluntary arbitration. After 1925 one may notice practically the complete disappearance of strikes from the agricultural labor scene.

In this later period about 40 percent of the farm labor disputes were settled through intervention of the mediation authorities. With the gradual deterioration of agricultural conditions after 1928, collective bargaining in agriculture became considerably undermined. It had to be increasingly sustained through vigorous public intervention. Of 203 labor disputes conducted by the D.L. V. during 1929, 34 were settled by an arbitration award declared binding upon both parties. With a general weakening of democratic procedures in Germany after 1930, measures of compulsion came to be used with increasing frequency in all phases of economic and political life, including the field of labor relations.

[28] I. L. O.: *International Labor Review*, vol. 15, no. 5, pp. 746–749, May 1927.
[29] Same source as number 28.

NEW LIGHT ON FACTOR ANALYSIS[1]

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SHOULD a farmer improve first the factors in which he is lowest? If his crop yields are low and his livestock efficiency is average, should he try to improve his crop yields first? Will this give the largest increase in income? Many farm management workers support the contention that the lowest factor should be improved first. A quotation from a recent farm management text is typical of statements that frequently appear:

> It is not enough, however, to be above average in only one or two of these factors. To be most successful, the farm business must be better than average in all of them. Contrary to some opinions, to be outstanding in some one factor alone does not make for the best income. Furthermore, a greater increase in income results from correcting the weakest factors than from improving those that are already good.[2]

The principle here quoted is used most frequently in connection with factor analysis. In this method the nature of the farm organization and the efficiency with which it is operated are represented by a small number of statistical measures, which may be called management factors.[3] Illustrations of these factors are size of business, crop yields, and livestock efficiency. For the analysis of an individual farm business these factors are frequently presented graphically in the form of a "thermometer chart." Such a chart is presented in Figure 1. Earnings and each of the management factors are represented by separate bars. The averages and ranges obtained from a group of farmers are usually used as standards for comparison. This graphic presentation provides an effective method for focusing the farmer's attention upon a broad, general analysis of his business. The details of the analysis can then be developed around this outline.

Background

The assumption that the lowest factor should be improved first is frequently supported by the relationship of earnings to the num-

[1] Paper No. 2033, Scientific Journal Series, Minnesota Agricultural Experiment Station. Condensed from Ph.D. thesis presented by the author to the Graduate School of the University of Minnesota.

[2] V. B. Hart, M. C. Bond, and L. C. Cunningham, Farm Management and Marketing, John Wiley & Sons, 1942, p. 167.

[3] No standard term has been developed for these measures. They have been called efficiency factors, success factors, farm business factors, and factors related to earnings. The term management factor is used here because their principal function is to serve as a guide to management.

ber of factors above average. This relationship is almost always positive and strong. Increasing the number of factors above average gives higher earnings. And increasing the number of factors above average means raising the lower factor.

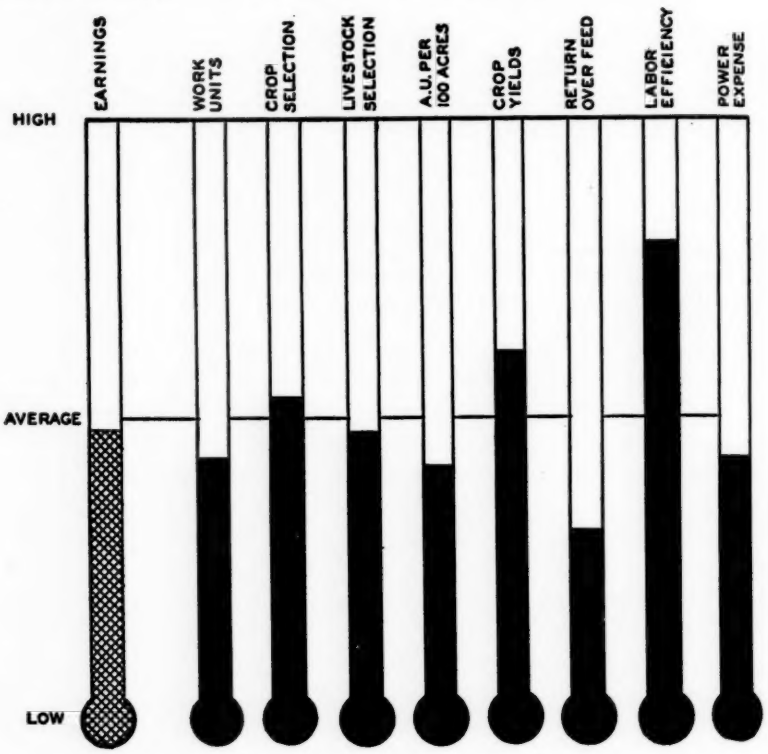


FIG. 1. EXAMPLE OF THERMOMETER CHART.

The widespread occurrence of diminishing returns among agricultural phenomena lends support to this assumption. If diminishing returns applies, a given application of effort to the improvement of a factor will yield greater returns if a factor is low than if it has been developed to a high level. However, there are three reasons for expecting that this is not very important. First, although analysis of the management factors commonly used indicates that diminishing returns would logically apply to most of them, statistical studies show that the relationship of earnings to most of them is linear, or shows only a slight curvilinearity. This

may, of course, be due to the fact that most of these studies have been made by comparing different farms, not by comparing different organizations or rates of efficiency on the same farm. Second, the slope of regression of earnings against the management factor differs among the factors. Even if diminishing returns did apply, some factors could profitably be raised to a higher level than others. Third, the influence of each factor varies from farm to farm. For example, crop yields can be raised profitably to a higher level on good soil than on poor soil. The combination of resources and abilities available to a farmer will influence the level to which he can raise each factor.

The many joint relationships between different factors also indicate possible losses from very low factors. For example, the effect upon earnings of an improvement in the cropping system is partially dependent upon the level of crop yields, and the effect of an increase in livestock numbers is partially dependent upon the efficiency of the livestock. An improvement in a low factor will be multiplied against the high factors; while improvements in a high factor will be multiplied against the low factors. But the effect of joint relationships, like that of diminishing returns, will be small because of variations in conditions from farm to farm.

Although diminishing returns and joint relationships among the factors indicate that there may be some advantage to increasing a low rather than a high factor, it appears unlikely that this influence is strong. Increasing high factors may give larger results on many farms.

Source of Data

This hypothesis is tested statistically with data obtained from the Southeast Minnesota Farm Management Service. A total of 1,545 records covering the eleven year period of 1928 through 1938 are used. The number of records for each year is shown in Table 1. The cooperating farmers kept records of inventories, purchases, sales, crop production, feeds used, livestock changes, and farm products used in the house, providing material for a detailed, accurate analysis. They were located in 14 adjoining counties, with most of them concentrated in six. Only dairy farms are included. Soil, topography, climate and market conditions are quite uniform throughout the area. The sample is, therefore, quite homogeneous.

Operator's labor earnings is used as the measure of financial

success. Eight management factors are used: (1) total work units, (2) index of crop selection, (3) index of livestock selection, (4) animal units of productive livestock per 100 acres, (5) index of crop yields, (6) index of returns over feed cost for livestock, (7) work units per worker, and (8) power machinery, and building expense per work unit. Each of these measures is expressed as standard deviations above or below the average of all farms. The standard deviations and variations from average were calculated separately for each year.

The arithmetic mean of the eight management fatcors is a composite measure of the quality of organization and efficiency of operation. It is termed "mean rank." When applied to a thermometer chart this is a measure of the average height of the bars. Since the factors measure most of the important parts of the farm business, measure no part twice, and show a strong correlation with earnings for each factor, mean rank should be a fairly reliable estimate of earnings. The average deviation of the eight factors around the mean rank is used as a measure of the relative ranking or relative height of the factors. The term "average deviation" is used only for this concept. A low average deviation indicates nearly equal heights of all bars on a thermometer chart, a high average deviation indicates widely differing heights.

If a low factor is raised, the average deviation will be reduced. If a high factor is raised the average deviation will be increased. There should, therefore, be a negative relationship between earnings and average deviation if it is most profitable to increase the lowest factors rather than the highest. The effect of mean rank must be removed in the analysis, because it is correlated with average deviation, and it shows a strong relationship with earnings.

Comparisons of Farms

Partial and multiple correlation coefficients and partial regression coefficients of earnings against mean rank and average deviation are presented in Table 1. Correlation analysis can be used because preliminary investigation showed no joint relationship between the independent variables and no curvilinear relationship. Correlations were first calculated for each of the eleven years separately. The data for all years were then combined into one sample.

The partial correlation coefficient ($r_{13.2}$) of operator's labor earnings against average deviation with mean rank held constant

is −.052 for the full eleven-year period. That is, there is a tendency for high earnings to be associated with low average deviation. The standard error of a correlation coefficient with 1,545 cases and assuming a zero correlation of the universe is .025. Since the observed coefficient is approximately twice the standard error there are about 5 chances out of 100 that a coefficient as large as this could be obtained by chance alone from an uncorrelated universe. This result supports the conclusion that there probably is a slight negative correlation of operator's labor earnings with average deviation. But it does not represent positive proof of the existence of such correlation.

TABLE 1. MULTIPLE CORRELATION AND REGRESSION COEFFICIENTS OF OPERATOR'S LABOR EARNINGS (X_1) AGAINST MEAN RANK (X_2) AND AVERAGE DEVIATION (X_3) 1928–1938

Year	Number of cases	Correlation coefficients			Regression coefficients	
		$r_{12.3}$	$r_{13.2}$	$R_{1(23)}$	$b_{12.3}$	$b_{13.2}$
1928	123	.702	−.020	.704	1.58	−.05
1929	171	.698	−.158	.698	1.59	−.46
1930	179	.580	−.028	.585	1.43	−.09
1931	141	.447	−.261	.482	.95	−.96
1932	137	.332	−.016	.332	.77	−.06
1933	105	.567	−.138	.568	1.33	−.43
1934	116	.477	.095	.533	1.16	.34
1935	146	.629	−.108	.621	1.40	−.31
1936	148	.531	−.059	.533	1.21	−.19
1937	161	.629	.006	.630	1.44	.02
1938	118	.508	.166	.555	1.15	.60
All years	1545	.560	−.052	.562	1.29	−.17

The data for the individual years fail to reveal a more definite evidence of such a negative correlation. The partial correlation coefficients ($r_{13.2}$) are not consistent from year to year, being negative for eight years, and positive for three. The coefficients for the individual years, like those for the eleven years combined, are small ranging for −.261 for 1931 to .166 for 1938. The standard error of the partial correlation coefficient ranges from .074 with 179 cases to .098 with 105 cases, again assuming zero correlation in the universe. Only the coefficient for 1931 is more than twice as large as the standard error. Even the significance of this is questionable, for the omission of four extreme cases changes the coefficient from −.251 to .012. The coefficients for 1929 and 1938 are twice the

standard error. The coefficients for the other eight years are less than twice the standard error. Correlation coefficients, of the size obtained in this study, even if statistically significant, are too small to be of any practical importance.

The regression coefficients ($b_{13.2}$) of earnings against average deviation with the influence of mean rank held constant are also small. The coefficient for the full eleven-year period is $-.17$, and for the individual years ranges from $+.60$ to $-.96$. Most of these, including the coefficient for the eleven-year period, are not highly significant.

These coefficients would not be of any practical importance even if they were statistically significant. The standard deviation of earnings for the eleven-year period is $1,085. The regression coefficient of $-.17$, then represents a change in earnings of $184. But that is the change in earnings accompanying a change of 1.00 in average deviation. The range of values of the average deviation will rarely exceed 1.5, equivalent to $276. This range is very small compared with the range in earnings due to all other causes.

Year-to-Year Changes on Identical Farms

This analysis was based upon comparisons of different farms. The same results are obtained when changes from year to year on the individual farms are compared. Records were obtained for two or more consecutive years from slightly more than two-thirds of the cooperators in the Southeast Minnesota Farm Management Service. This provides a sufficiently large number of cases for a satisfactory analysis of changes from one year to the next. The method of coding used in this study provides a reasonably accurate basis for measuring the year-to-year changes in operator's labor earnings, average deviation, and mean rank.

The values of operator's labor earnings and of the management factors are expressed in terms of the number of standard deviations by which these measures for a specific farm deviate from the average of all farms for the same year. The units of measurement are, therefore, comparable among the years. Since these measures are expressed in terms of deviations from the average of all farms, each year considered separately, it is possible to measure only the change for one farm relative to the change for all farms. For example, it is possible to measure only the extent to which the earnings for a given farm increased (or decreased) more or less than the entire group of farms. The effects upon earnings of changes in the average

TABLE 2. CHANGE IN OPERATOR'S LABOR EARNINGS FROM ONE YEAR TO THE NEXT RELATED TO CHANGES IN AVERAGE DEVIATION AND IN MEAN RANK, FOR TEN PAIRS OF YEARS FROM 1928 TO 1938

Change in mean rank	Change in average deviation: Decrease −.11 & down	Constant −.10 to +.09	Increase +.10 & up	All farms*
	Change in operator's labor earnings			
Decrease −.21 & down	−.63	−.72	−.86	−.73
Constant −.20 to +.19	−.03	−.02	−.05	−.04
Increase +.20 & up	.76	.54	.63	.64
All farms*	.03	−.04	−.06	−.03
	Change in average deviation			
Decrease	−.27	.00	.24	.00
Constant	−.22	.00	.22	.01
Increase	−.24	.00	.24	.01
All farms*	−.23	.00	.23	.00
	Change in mean rank			
Decrease	−.41	−.39	−.39	−.40
Constant	.00	.00	.01	.00
Increase	.40	.36	.41	.39
All farms*	.00	.00	.01	.00
	Number of cases			
Decrease				
Actual	86	90	56	232
Adjusted*	68	90	74	
Constant				
Actual	155	210	169	534
Adjusted	158	207	169	
Increase				
Actual	59	95	98	252
Adjusted*	74	98	80	
All farms	300	395	323	1018

* Adjusted to frequencies in the nine subclasses proportional to the frequencies in the "All farm" column and line.

levels of the management factors cannot be measured. However, the changes in the average values of the management factors from one year to the next, or even to the second year following, were quite small.

The average changes in operator's labor earnings, average deviation, and mean rank from one year to the next and the number of cases involved, classified by changes in average deviation and mean rank, are presented in Table 2. There is a slight negative relationship of changes in operator's labor earnings to changes in average deviation.[4] A decrease in average deviation of .23 is accompanied by an increase in operator's labor earnings of .03, and an increase in average deviation of .23 is accompanied by a decrease in operator's labor earnings of .06. This relationship corresponds quite closely with the results obtained by comparing different farms. However, the mean variance between these three groups (.76) is smaller than the variance within groups (.96), or the variance that would be expected to result from chance alone. The trend, therefore, is not statistically significant.

The relationship of earnings to average deviation is not influenced by differences in patterns of factors that may give equal average deviations. With a given average deviation all factors may deviate from the mean rank by a moderate amount, or most of the factors may be near the mean rank and one factor may deviate widely. For example, four factors may be one unit above the mean rank and four may be one unit below, or seven factors may be one-half unit above and one may be four and one half below. In each case the average deviation is one. The last case illustrates a farm with one very weak factor. The effect of such variations upon earnings was analyzed by cross tabulation. Cases of like average deviation were sorted according to the value by which the extreme factor deviated from mean rank. This showed no relationship to earnings. The influence upon earnings of raising the lowest factor was no greater if that factor was far below the other factors than if it was only slightly below.

Number of Factors above Average

Since there is little to be gained by raising a low rather than a high factor, why is there usually a strong positive relationship of earnings to the number of factors above average? Aside from the

[4] The disproportionately large number of cases for which both average deviation and mean rank decrease and for which both increase, resulting from a positive association of values of average deviation and of mean rank, distorts the averages in the "All farms" column and line. This has been corrected by weighting each of the nine subclasses by frequencies so adjusted that the frequencies in the three subclasses are proportional to the "All farms" line, and the frequencies in the three subclass columns are proportional to the "All farms" column

fact that the mean rank will be changed, it does not seem logical that the change of a factor from below average to above average will increase earnings. The measurement of the average is an arbitrary measure, not based upon any sharp change in the relationship of earnings to the management factors. Is it possible that it is due to differences in mean rank; that is, to differences in the average level of all factors?

There is a positive relationship of mean rank to the number of factors above average. This is presented in Table 3. The mean rank, or average value of all factors, increases as the number of factors above average increases.

TABLE 3. RELATIONSHIP OF MEAN RANK AND OF OPERATOR'S LABOR EARNINGS TO THE NUMBER OF FACTORS ABOVE AVERAGE
1928–1938

Number of factors above average	Number of cases	Mean rank	Operator's labor earnings		
			Actual	Expected*	Deviation of actual from expected
0	24	−.86	−1.19	−1.11	−.08
1	113	−.63	− .67	− .81	+.14
2	205	−.40	− .45	− .52	+.07
3	288	−.18	− .28	− .23	−.05
4	380	.02	.00	.03	−.03
5	286	.27	.32	.35	−.03
6	170	.48	.59	.62	−.03
7	66	.67	1.04	.86	+.18
8	13	.96	1.12	1.24	−.12
All farms	1545				

* Based upon the estimating equation—Expected earnings = 1.29 × mean rank.

The actual earnings and the earnings that would be expected on the basis of variations in mean rank are presented in Table 3. The expected earnings were calculated from the partial regression coefficient of 1.29, shown in Table 1. The deviations of actual earnings from the expected are quite small, ranging from −.12 to +.18. They are not statistically significant; deviations as large as these could easily occur as the result of chance alone. The increase in earnings with increasing number of factors above average can be accounted for on the basis of increases in the average value of all factors.

The number of factors above average is an approximate measure of the mean rank of the management factors, and as such can be used to account for variations in earnings among farmers. It is not

a perfect measure of men rank, however, for it is not influenced by changes in the management factors unless they are changed from one side of the average to the other. But its simplicity makes it a valuable measure to use, particularly in popular presentations of the results of research work or of farm management service associations. It is easily explained and easily understood by the untrained person. It can be calculated with the factors expressed in the original units. Expression in terms of mean rank requires the conversion to some unit of measurement which is comparable for all factors. This procedure makes the factors less easily understood by persons not constantly dealing with statistical data. The measure of number of factors above average does, therefore, have a very practical use. But it also has a serious drawback. It focuses attention upon the distinction between the below-average and the above-average factor. Farmers, and others not thoroughly familiar with the characteristics of these measures, are likely to interpret these tabulations as indications that as many factors as possible should be above the average rather than as an indication that the mean rank, or average level of all factors, should be as high as possible.

Conclusions

This analysis indicates that a farmer's earnings may be increased slightly more by improving the factors in which he is lowest than by improving the factors in which he is highest. The data indicate this to be a probability, not a certainty. But the difference is so small as to have no practical importance. The simple rule that a farmer should improve first the factor in which he is lowest cannot be used safely as a guide in managment. A thorough analysis of the nature of all factors and the opportunities for improvement on the individual farm is needed in each case before a positive recommendation can be made to the operator.

NOTES

EXPORT MARKET AND PRICE OF LARD

THE STUDY of export outlets for agricultural products will be of increasing importance when war ends and post-war relief requirements are met. Attention will be centered principally on those commodities for which large export surpluses exist. At present, exports of cotton, wheat, and tobacco from the United States are small, but exports of dairy products, pork, soybean products, and lard, mainly under lend-lease, are large.

In the post-war world American producers of agricultural commodities for export are likely to face severe competition from low-cost producers in other surplus-producing areas. At least three alternative policies to meet this situation have been discussed: (1) To permit domestic prices to decline to the foreign-market level; (2) to devise a two-price system whereby prices may be maintained at a relatively high level in the domestic market but be permitted to decline to a competitive level for that portion of the commodity to be sold abroad; or (3) to adjust production downward to the point where domestic prices may be maintained at a reasonably high level.

Whatever policy is followed, it will be desirable to know something about the effects of changes in foreign demand and supply on prices of American export commodities. Lard is one of the leading agricultural export commodities, and the purpose of this paper is to obtain an approximate idea of the importance of changes in exports on the domestic price of lard.

Large quantities of lard were exported from the United States in the 1920's. In the 1930's exports declined sharply, first, as a result of drought and reduced production, and, second, as a result of changes in foreign market conditions. Lard prices also declined, despite the fact that the domestic demand for lard was strong in the later years.

Two factors in the late 1930's were of paramount importance in their effect on exports. These were the partial break-down of international trade relations accompanied by a growing tendency toward national or empire self-sufficiency, and a marked upward trend in world production of low-cost vegetable and marine oils capable of being substituted for lard in the form of compound cooking fats. During the 1920's, Germany took about one-third of the total lard

exports from the United States. After 1933, Germany sought to obtain its fat requirements from an expanded domestic output, from large-scale whaling expeditions, and from countries with which profitable barter arrangements could be made. German imports of American lard dwindled to the vanishing point. In the United Kingdom, the principal foreign outlet for American lard, increasing use was made in the 1930's of cooking fats manufactured from hardened whale oil and vegetable oils obtained mostly from Empire sources. Total exports and shipments of lard from the United States in 1940, a year of about average lard production, amounted to only 232 million pounds, about one-third of average exports in the pre-drought period 1924–33 and about two-fifths of average exports in the period 1922–40.

A precise determination of the effect of marked changes in exports resulting from changes in foreign demand or supply on the consumption and price of lard in the United States probably is not possible by means of existing data. But it is possible to obtain results which will reveal whether such changes have or have not had significant effects on domestic lard prices.

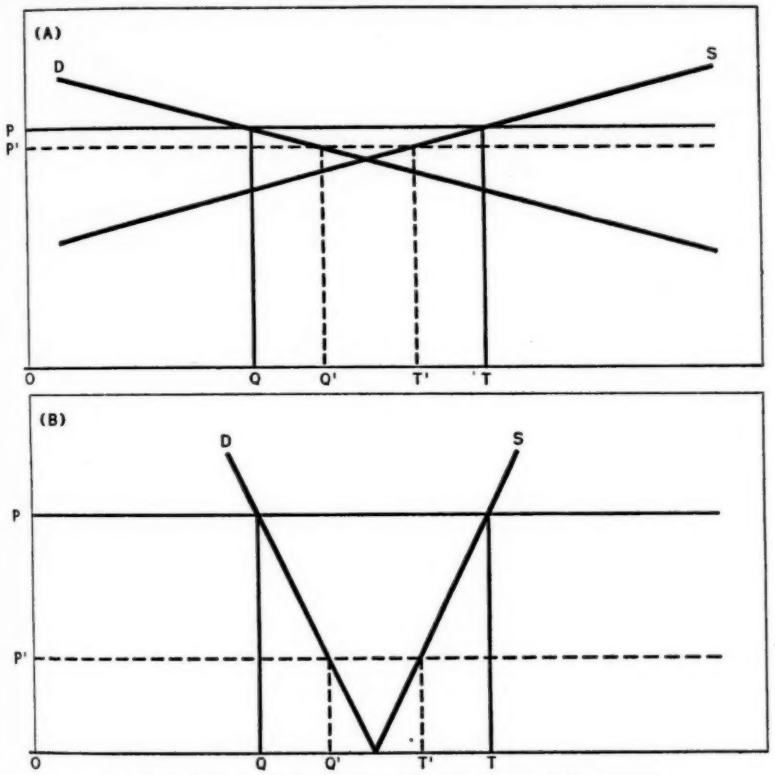
With any given change in exports resulting from a shift in foreign demand or supply, or both, the changes in domestic production, consumption, and price that will follow will be determined by the slopes of the domestic demand and supply curves. This is indicated in Figure 1. If, as in section A of this illustration, both the domestic demand and supply curves are flat, the price of the commodity will be reduced only moderately as a result of a given reduction in exports. But if both the demand and supply curves are steep, as shown in section B, a drastic downward adjustment in prices will be necessary to restore equilibrium. With both slopes in intermediate positions, the decline in price, of course, will fall between these two extremes. Because of the importance of the slopes of the domestic demand and supply curves in determining the effect on prices of marked changes in exports, an attempt is made in following sections to obtain approximations of the slopes of these curves.

Slope of the Demand Curve for Lard

Two difficulties are encountered in attempting to measure the slope of the demand curve by means of correlation analysis. The first has to do with a possible lack of independence among the observations; the second with the meaning of demand curves when

statistically derived. The regression of price on consumption is not the same as the regression of consumption on price, except when the coefficient of correlation for price and consumption is unity. In the

EFFECTS OF LOSS OF EXPORTS ON CONSUMPTION AND PRICE WITH DIFFERENT SLOPES OF DOMESTIC DEMAND AND SUPPLY CURVES



D=Demand curve S=Supply curve P=Original price P'=Modified price
OQ and OQ'=Consumption before and after loss of exports
OT and OT'=Production before and after loss of exports
QT and Q'T'=Exports before and after change

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FIG. 1. A LOSS OF EXPORTS RESULTING FROM CHANGES IN FOREIGN CONDITIONS WILL HAVE DIFFERENT EFFECTS ON DOMESTIC PRICES WITH DIFFERENT SLOPES OF THE DOMESTIC DEMAND AND SUPPLY CURVES. THE NEW PRICE AFTER A LOSS OF EXPORTS, OTHER THINGS REMAINING EQUAL, WILL BE ONLY SLIGHTLY LOWER THAN THE ORIGINAL PRICE IF BOTH THE DEMAND AND SUPPLY CURVES ARE RELATIVELY FLAT (SECTION A), BUT WILL BE MATERIALLY LOWER IF BOTH CURVES ARE STEEP (SECTION B).

first case, price alone is considered as a variate; that is, for any given level of consumption there is assumed to be a distribution of prices. The mean value of this distribution is considered to be functionally related to the level of consumption. In the second case, consumption is considered as a variate, but price is not. From any four-curve setup for domestic and foreign supply and demand curves, it is apparent that in the restoration of equilibrium following a shift in one or more of the curves the adjustments in price and consumption are made simultaneously. In effect, price and consumption may both be considered as variates. That being the case, neither of the two regression lines determined by the method of least squares can be regarded as the true demand curve.

A method for determining a regression line for two variates in a three-variable problem under the conditions imposed by equilibrium analysis has not been evolved. Hence, in the present instance, the two least-square regression curves, i.e., the regression of price on consumption and the regression of consumption on price, were calculated.

Three variables were employed in the correlation analysis: the average retail price of lard for principal cities (Bureau of Labor Statistics), the total domestic disappearance of lard plus carryover December 31 and index numbers of income of industrial workers (Bureau of Agricultural Economics). All data are on a calendar year basis for the 19-year period 1922–40. The results are summarized on the next page.

As indicated in the Table, the coefficients useful in this analysis meet the usual tests of reliability and significance. These tests, however, are based on assumptions which may not be entirely valid in the present case.

The partial regression curves derived by the method of least squares from the correlations of price on consumption and consumption on price yield demand elasticities for the mean point of -0.75 and -0.56 respectively. With straight line regressions, the elasticity varies from point to point, diminishing as consumption increases. But for both curves the elasticity of demand is less than unity for nearly all points within the range of the observed data. It would seem, therefore, that the demand for lard in the United States in recent years has been inelastic. The demand curve for lard, as shown in Figure 2, has been steep.

COEFFICIENTS

Coefficient	Regression of *Price* (X_1) on consumption (X_2) and income (X_3)	Regression of *Consumption* (Y_1) on price (Y_2) and income (Y_3)
$R_{1.23}$ (Multiple correlation)	0.934	0.868
$S_{1.23}$ (Standard error of estimate)	1.625	0.112
$b_{12.3}$ (Regression slope of variable 1 on variables 2 and 3)	−12.506	−0.060
$sb_{12.3}$ (Standard error of slope)	1.831	0.009
$t=b_{12.3}\ sb_{12.3}$ ("Student's" t value)	6.831*	6.830*
$b_{13.2}$ (Regression slope of variable 1 on variables 3 and 2)	0.108	0.006
$sb_{12.3}$ (Standard error of slope)	0.016	0.002
$t=b_{13.2}/sb_{13.2}$ ("Student's" t value)	6.593*	3.821*
η (Elasticity of demand at mean values)	−0.75	−0.56

* Significant at the level of probability of 0.01.

MEAN VALUES, 1922–40

Lard: average retail price per pound in leading Cities	Domestic consumption of lard plus carryover December 31	Income of industrial workers (1935–39=100)
Cents	*Billion pounds*	*Percent*
15.73	1.67	106.03

Slope of the Supply Curve for Lard

It is well known that changes in the production of lard are determined chiefly by changes in the number and average live weight of hogs slaughtered, although such factors as type and finish of hogs and the proportion of edible hog fat that may be tanked as grease or left untrimmed and sold as meat also have a bearing on the volume of lard production. Changes in the number and live weight of hogs slaughtered depend to a considerable extent on changes in the hog-corn price ratio, with appropriate time lags to allow for heavier or lighter feeding and breeding. In recent years, lard has represented only 10 to 15 percent of the total wholesale value of hog products, and hog prices and the hog-corn price ratio have not been greatly affected by changes in lard prices. Lard production has been affected to an even smaller extent by changes in lard prices. The supply curve for lard, therefore, may be considered to be almost vertical, as will become evident if a statistical determination of this curve is attempted.

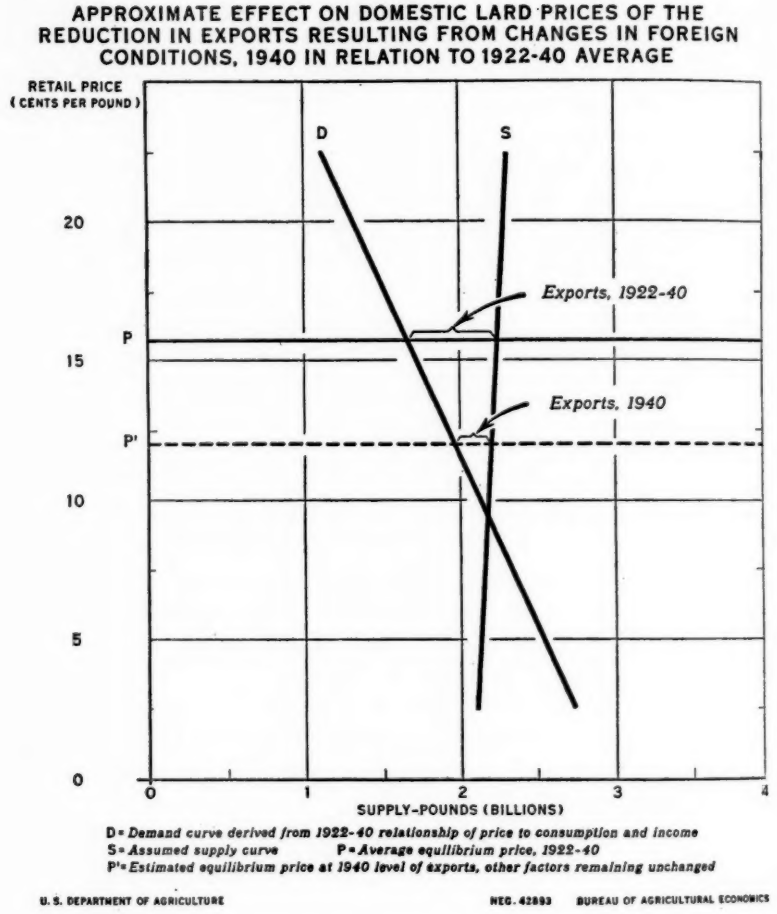

FIG. 2. EXPORTS OF LARD IN 1940 WERE ABOUT TWO-FIFTHS AS LARGE AS THE 1922–40 AVERAGE. THE PRICE DETERMINED BY ADJUSTING THE LINE SEGMENT REPRESENTING 1940 EXPORTS TO FIT THE 1922–40 DEMAND AND SUPPLY CURVES IS APPROXIMATELY A FOURTH LOWER THAN THE 1922–40 AVERAGE PRICE. BOTH THE DEMAND AND SUPPLY CURVES FOR LARD IN THE UNITED STATES ARE STEEP, AND A MATERIAL CHANGE IN EXPORTS RESULTING FROM CHANGES IN FOREIGN CONDITIONS WILL HAVE A PRONOUNCED EFFECT ON DOMESTIC LARD PRICES.

Approximate Effect of Reduction in Export Demand, 1940 Compared with 1922–40 Average

An effort has been made to measure the effect of the reduction in exports resulting from a decline in export demand for American lard

from the 1922–40 average level of exports to the level prevailing in 1940. To isolate the effect on prices of the shift in exports, average demand and supply curves were taken for the domestic market. A reduction of approximately three-fifths in domestic exports was assumed. (Figure 2.) Actually, of course, the demand and supply curves shift from year to year in response to changes in consumers' preferences and incomes, prices of competing products, and other factors. But it is precisely these things that need to be eliminated from the analysis (by the assumption of average curves) to measure the effect of the reduction in exports on prices.

The domestic demand curve shown in Figure 2 is plotted through the point of average price and consumption for the period 1922–40 and therefore represents average conditions in that period. The slope of this curve ($b_{12.3} = -12.51$) was determined by the indicated relationship of price to consumption including carry-over and income. The alternative slope based on the relationship of consumption to price and income is not shown. This slope is somewhat steeper than the one used. The domestic supply curve is plotted through the point of average price and average supply (consumption including carry-over plus exports) for the 1922–40 period. The slope of this curve was assumed to be almost vertical. The distance between the two curves at price level P represents the average annual exports of lard from the United States in the 19-year period.

To obtain a measure of the effect of the reduction in exports from the period 1922–40 to 1940, resulting from a shift in the foreign demand or supply curve for lard, i.e., from a reduction in export demand, a horizontal line was drawn through the domestic demand and supply curves at such a level that the distance between the curves was graphically equivalent to actual exports in 1940. This level gives an estimate of the equilibrium price which would have prevailed in 1940 if all factors affecting price except exports had remained equal to the 1922–40 average.

The distance from P to P′ on the vertical scale gives an approximate measure of the effect of the reduction in exports from the period 1922–40 to 1940 on the price of lard. The estimated equilibrium price for 1940 (P′) is about 24 percent lower than the average equilibrium price (P) for the period 1922–40. If the steeper demand curve derived from the relationship of consumption to price and income in the period 1922–40 had been used in the chart, the

indicated reduction in price would be near 30 percent. Different slopes for the domestic supply curve, which is assumed to be almost vertical, also would give different results. The actual effect of the reduction in exports from 1922–40 to 1940 on the price of lard therefore cannot be stated with finality. So far as the evidence goes, it would appear that the price of lard in 1940 was perhaps one-fourth lower than it would have been if exports had remained at the 1922–40 average level.

Summary

The discussion may be summarized as follows:

(1) Because of increased competition abroad from hardened vegetable and marine oils, and other factors, exports of lard from the United States in 1940 amounted to about two-fifths of the annual average for the 19-year period, 1922–40, although the production of lard in 1940 was greater than the 19-year average.

(2) The reduction in exports may be said to have been due to a shift to the left in the foreign demand curve for lard. A shift to the right in the foreign supply curve could have produced the same result.

(3) The effect of a reduction in exports, resulting from a shift in the foreign demand (or supply) curve, on domestic prices and consumption will depend on the slopes of the demand and supply curves in the domestic market. If the slopes of the domestic demand and supply curves are flat, price will be only moderately reduced. But if the slopes of both curves are steep, a pronounced decline in prices will occur. The converse applies if exports are increased.

(4) The available evidence indicates that the demand curve for lard in the United States in recent years has been steep and that the supply curve for lard has been almost vertical.

(5) Approximate results of the analysis for the 19-year period, 1922–40 (shown in Figure 2), indicate that the retail price of lard in the latter part of the period was perhaps one-fourth lower than it would have been if export demand had not declined and exports had been equal to the average for the 19-year period.

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SOME CONSIDERATIONS ON FORWARD PRICES*

A FEW suggestions from the political front together with some of the more recent discussions in agricultural economics seem to indicate that forward pricing for agricultural commodities may be given serious consideration, not only as a measure to aid in prosecuting the war but as a more or less permanent feature of post-war agricultural policy. The Department of Agriculture is already garanteeing minimum prices to producers of some commodities announcing these prices far enough in advance that farmers may make definite plans on the basis of such announcements. President Roosevelt in his message to Congress on September 7 explicitly voiced his approval of extending price "floors" for agricultural commodities for a considerable time into the post-war period. And a few economists have sanctioned forward prices in agriculture as a means of effecting a considerable saving in resources in the economy.[1]

The theory of forward prices may be economically sound, i.e., under certain conditions forward pricing might give rise to a "better" allocation of resources than could be attained in their absence. The principal problem is to determine not whether the theory is sound, but whether the conditions are met for its successful operation in practice. There seems to be little question that there are certain parts of the economy which can be effectively administered, but that there are others where administration of prices in particular is unsound. We have not yet made the choice between an administered and a non-administered agriculture. Hence the time has not yet come for us to choose only between poor administration and good administration. The first choice must be made first.

This paper is not an appraisal of forward prices as either an effective means for meeting war needs or for satisfying certain powerful political elements. Attention will be focused upon the mechanism of forward prices regulated by a central governmental agency as a means of directing production in "normal" peace time. Part of the paper will be centered around the conditions under which the "Na-

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[1] See particularly T. W. Schultz, Economic Effects of Agricultural Programs, *American Economic Review*, Vol. XXX, No. 5, Feb. 1941, and Geoffrey Shepherd, Bases for Controlling Agricultural Prices, JOUR. OF FARM ECON., Nov. 1942.

tional dividend" might be increased by forward prices administered by such an agency, with special reference to agriculture, and upon some of the considerations in appraising the likely results of such regulation.

Price determination by forces other than those acting in a competitive market has been almost universally condemned by proponents of laissez faire. The basis for such condemnation has usually been that resource allocation arising in an enterprise economy, even though subjected to numerous rigidities, will be superior from the the standpoint of maximizing human satisfaction to the allocation arising from price administration by a special agency (perhaps a governmental agency) subjected to the influences of pressure groups attempting to improve their own welfare at the expense of other groups.[2] This contention has been supported by classical economic doctrine. Its validity, however, is still open to question, for there is little comparative experience to support either its supporters or their adversaries.

The allocation of resources without governmental interference under conditions of perfect competition would perhaps be superior to that which could usually be attained by political means. However, such price determination becomes less effective in maximizing the "social net product" when uncertainty, particularly price uncertainty, is introduced.[3] Uncertainty of expected product prices being realized usually results in the necessity for maintaining flexibility in the firm's production plan in order to enable it to make adjustments in output to meet price changes in the product market. Such flexibility can be attained for the most part only at a cost to the firm, and ultimately to society, greater than would be necessary in

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[2] For a summary presentation of this position refer to F. H. Knight, Socialism: The Nature of the Problem, Ethics, Vol. L, No. 3 (April, 1940), and Economics and Nationalism in The Ethics of Competition, 1936. See also Henry C. Simons, A Positive Program for Laissez Faire, Public Policy Pamphlet No. 15, University of Chicago Press.

[3] By price uncertainty we have reference to the situation in which the probability attached by the entrepreneur to the probability distribution of the anticipated future price pattern is less than one. Rather there exists in his mind an *a priori* probability distribution of expected prices in the future. This should be called more appropriately subjective price uncertainty. Where the probability distribution of expected future prices is anticipated with certainty, we are dealing with subjective price risk. See F. H. Knight, Risk, Uncertainty and Profit, and G. Tintner, A Contribution to the Non-Static Theory of Production, included in Lange, et al., eds., Studies in Mathematical Economics and Econometrics, University of Chicago Press, 1942.

the absence of such flexibility.[4] Then too, since entrepreneurs have imperfect foresight, particularly with respect to future product prices, they often "waste" resources in producing too little of one commodity and too much of another relative to society's desires.[5] Even though their costs may not be reduced by reducing price uncertainty, if they are made aware at the beginning of the production period of society's demands as reflected in the prices which society will be willing to pay for various quantities of various products at given dates in the future, they might avoid part of the "waste."

Those proposing to substitute price regulation by a central political agency for price determination in the market propose (1) to shift the uncertainty of realizing expected prices from the firm to society, and (2) to let the central agency formulate expectations of society's future demands and the reactions of firms to given prices, rather than let entrepeneurs formulate their own expectations of these phenomena. In order for this sort of proposal to merit serious consideration it must be demonstrated that (1) if the uncertainty is shifted directly to society rather than resting upon the firm, the costs to society of collectively bearing such uncertainty are less than the gain resulting from the reduction in production costs, and (2) that the central agency is capable of more accurately anticipating future demands and producers' reactions to given prices than is the aggregate of producers.

Some Gains from Shifting Uncertainty to the Central Agency

Let us examine first the question of whether the shifting of price uncertainty from the farmers to society will result in any significant gains to society, assuming that the central agency's guesses of future prices are as bad as those of farmers, but no worse (only uncertainty of product prices, not uncertainty of the prices of productive agents

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[4] In attempting to cope with uncertainty of future prices firms often attempt to maintain flexibility in their production, sales and financing plans so that such plans may be revised if it becomes apparent that the estimates made at the beginning of the period were in error. Flexibility may be desired even under certainty, and unquestionably would be maintained in some degree if only price uncertainty were eliminated. For a more complete framing of uncertainty and its effect on planning see A. G. Hart, Anticipations, Uncertainty, and Dynamic Planning, Studies in Business Administration, School of Business, University of Chicago, 1940 and G. Stigler, Production and Distribution in the Short Run, *Jour. of Political Economy*, Vol. 47, 1939, pp. 308 ff.

[5] See A. C. Pigou and D. H. Robertson, Economic Essays and Addresses, 1931, P. S. King and Son, Ltd., London, pp. 34–44.

nor uncertainty of transformation conditions would be eliminated). In order to answer this question we must know something of the reactions of farmers to uncertain product prices and the costs which might be incurred by the central agency in administering prices.

Although it is a question of fact on which little empirical evidence is available, it seems likely that many farmers may disregard the possibility of making special adjustments in their production organization in order to meet product prices which might differ from those which they expected. These firms may gear their production plans toward producing the output which they expect to be most profitable and disregard possible adjustments requiring flexibility. Should their expectations be realized their profits will be greater than those of firms which anticipated a need for possible adjustments in their production plans to meet price changes and who incorporated costly flexibility into these plans; but should prices lie above or below the expected level their profits may be less or their losses greater than those of firms whose production plans were more flexible. This sort of reaction might be expected from single-enterprise farms such as wheat or cotton farms where little flexibility is possible once the production plan is in operation. If these farmers had knowledge of prices to be received for the product at the beginning of the production period, such knowledge would probably not reduce their costs to any great extent.

On many other farms the types of flexibility which are employed may be such that they require only a very small expenditure of resources. For example in hog production, farmers may breed more sows than they plan to farrow and dispose of the excess before they are noticeably "piggy" if their price expectations are not revised upward or farrow all of them if expected prices take an upward turn. Such flexibility is usually not an important addition to costs. Reductions in price uncertainty would not significantly reduce costs for these firms.

However, on some farms (usually "multi-enterprise" farms) certain forms of flexibility which are fairly costly in nature may be employed as a reaction to price uncertainty. In hog production costs of acquiring more pigs than the entrepeneur's sows have farrowed may be considerably higher than the cost of farrowing them, or returns from their sale of small pigs may be much less than the cost of resources employed in farrowing them. Hence, attempting to obtain

flexibility in output after the firm's sows have farrowed may prove costly. Flexibility in output may also be attained by alterations in weights at which hogs may be sold, greater output being possible by increasing the length of the feeding period. Weight added after 275 lbs. usually costs more per pound than earlier gains, and in addition the danger of disease increases as the hogs are held longer into the winter. This sort of diversity in productive units which farmers employ in response to uncertainty, both price and technological, tends to increase costs over what they might be if more specialization took place. Hence, a reduction in price uncertainty probably would result in a reduction in costs to these farmers.

All flexibility which is maintained by the firm in order to enable it to adjust to possible price contingencies and is costly to it may not be costly to society. In fact such flexibility may result in a social saving, and if it were eliminated society might be the loser. For example, the changes in grain prices which may occur during the production period as a result of unusual crop conditions are signals for shifts in resource use which were not anticipated during the period and which may affect production in the next period. Note the effect which drouth in the western corn belt might have upon the corn prices in the eastern corn belt and the consequent reduction in corn utilization on farms in the eastern area even though prospective corn supplies on these farms may be high. Improper price regulation might eliminate any social saving resulting from such flexibility. However, it might be maintained under price administration by announcement of prices to be paid in a given production period early in the preceding period before plans for the given period have been definitely formulated.

The above examples indicate that there are situations in which farmers' costs could be reduced by reducing price uncertainty, and that there are other situations in which costs would not be reduced. The extent of actual cost reductions which could be accomplished could be accurately estimated only after extensive empirical investigations.

Costs Involved in Shifting Uncertainty to a Central Agency

The costs of shifting uncertainty to a central agency would include (1) the agency's administrative costs, (2) losses from prices paid to farmers which are too high to clear supplies from the market

when they are resold and/or (3) storage costs if the central agency wishes to level out vagaries in supplies due to improper price administration. (The central agency would probably act as a "middle-man" buying from farmers and selling to processors. Producers would have the alternative of selling to the central agency or directly to processors.)

A minimum price guaranteed for eternity would be desirable, even if it were the "equilibrium" price, only if tastes, incomes, technical conditions, technology, and all of the other factors underlying production and consumption were also fixed for eternity. Since this condition is not approximated in reality, forward prices must be made flexible to allow for changes in the conditions of production and consumption and for improper estimates of such conditions by the central agency formulating the prices, if the benefits to society are to be greatest. A price should be "fixed" for no longer than one production period and then altered to fit the new anticipated conditions of supply and demand. Consequently, long period price uncertainties — those resulting from such long time commitments as fixed plants — are not being eliminated, and only the costs incurred through the necessity of mantaining flexibility in a given production period might be dispensed with by such price administration as we are considering. In order to estimate future prices with some accuracy the central agency would have to have a research agency of considerable size to compute expected demands and to determine farmers' responses to various prices.

If the price administering agency guarantees prices for the period without restrictions upon producers it must be prepared to pay the fixed price for any quantities of a given commodity included in the schedule. Consequently, should the price which it fixes be higher than the price at which it can dispose of the commodity to consumers, it might take a loss on the present period's production or store the excess and offer a lower price in the next production period in order to induce a lower production (assuming increasing costs to firm producing the product). Should the agency's price be lower than that which consumers are willing to pay, none of the commodity will pass through its hands.

Storage costs might be high, particularly in the perishable commodities. Such commodities are often produced under conditions where a reduction in price uncertainty to the firm might enable a re-

duction in the firm's production costs, while the less perishable commodities which could be more easily stored are often produced under conditions were firms react in about the same manner to certain product prices as to uncertain ones.

Until more empirical information is available we cannot draw any definite conclusions as to the actual costs of administering forward prices as compared with the gains which might result due to the reduction in the firm's production costs. Determination of these factors may prove a fertile field for future research in agricultural economics.

Other Possible Gains from Forward Prices Formulated by a Central Agency

The most significant gains to society as a result of administering prices by a central agency might arise from the central agency's superiority over the aggregate of farmers in anticipating correctly future prices. At present a relatively important sector of the Bureau of Agricultural Economics (as well as other federal, state and private agencies) is devoted to assembling and disseminating so-called "outlook" information. The accuracy of the forecasts made by this agency is difficult to measure since such forecasts have been attempts to estimate how producers would react to the forecasts themselves as well as the estimates of the consumer demand and the reactions of producers to phenomena other than the price forecasts.

However, most authorities would consider outlook estimates as being potentially more accurate than the aggregate of individual's estimates. For example, note a recent situation with regard to hogs. Hog prices in the fall of 1940 were very low, heavy hog marketings occurring early in the season. Most farmers were making their plans for the 1941 spring crop of pigs during this low-price period, and many of them expected the existing low prices to continue. Since beef prices were relatively high and had been high for some time many farmers expected beef to be a better product into which to convert their feed and labor resources than hogs. The result was that hog numbers in 1941 were somewhat lower than warranted while beef supplies were probably too high in view of our limited resources and the heavy demands for pork and pork products. Both consumers and those producers who cut their hog production were losers in terms of prices and production as they might have been had

the probable price situation been more clearly understood when plans were being formulated. Outlook reports indicated the situation as it was likely to be when production plans matured, but such information was apparently insufficient in guiding producers toward producing harmoniously with the demands of the economy. The fact that outlook information is not universally received by farmers and that it has been occasionally misleading, reduces its force as a guiding agency in formulating farmers' expectations, even though such information is probably far superior to that which would be assembled by individual farmers themselves.

It is contended by those who advocate prices administered by the central agency that if we substitute for the present guiding force to farmers' expectations (expected prices as indicated by outlook information) the stronger force of actual guaranteed prices announced at the beginning of the production period, and we use as basic data for formulating these regulated prices, material assembled by forecasting agencies, we are likely to bring production more in line with the "needs" of the economy. Since the forecasts of the central agency are likely to be more accurate than those of individuals, and since these forecasts, when made as price guarantees, have more influence in formulating production plans than mere outlook reports, society would gain economically from such operations.

Some Further Considerations

In the preceding discussion we have pointed out some of the conditions under which a social saving might be incurred as a result of prices being administered by a central agency rather than directly formed in the market. We have indicated that for there to be a saving resulting from shifting the uncertainty of price changes from the firm to the central agency, certain costs must be eliminated. Some of these costs, resulting from the need for maintaining flexibility to meet unexpected contingencies may not be important in agricultural production, particularly where production is highly specialized as in wheat or cotton. Where "over-production" and "under-production" in terms of so-called equilibrium conditions, is frequent, some savings may accrue to society if the central agency is able to anticipate more accurately than the collective of individuals the equilibrium conditions, so that it may guide production more effectively than individual producer's expectations. Whether a central agency could

more effectively foresee demand conditions and suppliers' responses to price than could individuals is still largely speculative, but if it could there would be definite gains from forward prices.

Aside from these economic questions are perhaps the more important political ones of the nature of the central agency delegated to administer prices and the probability that its power could or would be exploited by political groups for the satisfaction of special interests. Should the agency (aside from its technical research and administrative staff) be an appointed or elected individual or body? If it is enlightened, unbiased and despotic, action might be somewhat in line with social interests, but enlightened despotism has little possibility of continuity if past experience is any indication of the immediate future. If the agency is appointed and responsible to the executive it must answer somewhat to political policy, and, even worse if it is directly elected it cannot always stand on a record of serving the social interest (whatever that may be), but must appeal more than occasionally to special interests. Irresponsibility to political interests might mean the application of pressures by the agency toward directing farm resources in a particular manner, i.e., unless farmers acted according to the agency's wishes prices might be set at low figures in retaliation. (This danger might be minimized if the central agency were only a middle-man and farmers were not forced to sell through the agency.) But responsibility to political interests might also mean bowing to pressures to alter prices to satisfy political ends rather than to obtain the "best" allocation of resources. Experience with tariffs and commodity loans on agricultural commodities points toward the likelihood of continually increasing prices and a consequent misallocation of resources, rather than the formation of prices to coordinate desires and resources in the most effective manner. Such constantly increasing prices might be offset by appropriate monetary action, but unlike labor leaders, farm leaders have thought in terms of relative prices, not absolute prices. The dilemma of political responsibility and objectivity cannot be easily solved.

Whether such an agency could exist alone in an economy the remainder of which is so-called free enterprise economy is also questionable, but the question may never need an answer. In spite of the opportunities for economic gains which may avail themselves from this type of program the opportunity for economic losses is

also present. Whether political direction will be substituted for economic direction if this type of proposal is incorporated into the agricultural program is speculative, but previous experience seems to indicate that political direction yields to special pleading and a constant altering of the rules to favor those who are politically most powerful. Such pleading cannot be avoided in democracy, and the results of such pleading where sufficient to bring political action are the things which seem to threaten most seriously the survival of democracy. Hence, if we consider democracy coupled with a fair degree of economic efficiency to be the desirable type of social organization, we must try to avoid the substitution of arbitrary political guidance for fairly dependable rules. Even where the economic gains are unquestionable (and they are not clear cut in the issue we have been analyzing) but questions of loss of personal freedom are involved, it may not be desirable to trade such freedom for gains in economic efficiency. This is one of the points where we must choose.

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SUPREME COURT UPHOLDS STATE PRORATION

A DECADE ago the writer proposed compulsory proration in agricultural marketing under State supervision as a means to avert economic disaster in certain agricultural industries under certain circumstances.[1]

In June, 1933, the California Legislature passed the Agricultural Prorate Act.[2] Since then a number of programs have been instituted under its provisions. Two of them, a lemon proration program and a raisin program, were vigorously attacked in the courts, primarily by handlers and dealers.

The California Supreme Court passed on several phases of the act in 1936 and declared the act not in violation of the Federal and

[1] E. A. Stokdyk, Economic and Legal Aspects of Compulsory Proration in Agricultural Marketing. California Agricultural Experiment Station Bul. 565. 1–44: 1933. The results of this study were made available early in 1933 to the California Farm Bureau Federation, which sponsored the California Agricultural Prorate Act.

[2] Act of June 5, 1933, Ch. 754, Statutes of California of 1933. Amended by Chs. 471 and 743, Statutes of 1935; Ch. 6, Extra Session, 1938; Chs. 363, 548, and 894, Statutes of 1939; and Chs. 603, 1150, and 1186, Statutes of 1941.

State constitutions.[3] The District Court of the United States for the southern District of Southern California, in a case involving a raisin program, held, however, that the program was an illegal interference with and undue burden upon interstate commerce.[4]

Finally, the United States Supreme Court, on January 4, 1943, rendered an opinion[5] reversing the findings of the District Court and passed on several features of the raisin proration program as conducted under the Agricultural Prorate Act. This decision is of interest and importance to agricultural economists and lawyers handling agricultural marketing programs.

First, the Court passed upon the possibility of the raisin proration program's conflicting with the Sherman Anti-Trust Act. It was held that it did not, because the program was conducted under State supervision and was not an ordinary business combination, such as is under scrutiny of the Department of Justice under the Sherman Act. The Court said: "The State in adopting and enforcing the prorate program made no contract or agreement and entered into no conspiracy in restraint of trade or to establish monopoly, but, as sovereign, imposed the restraint as an act of Government which the Sherman Act did not undertake to prohibit."

Next, the opinion held that the program was not in conflict with the Agricultural Marketing Agreement Act[6] or in conflict with the powers of the Secretary of Agriculture. After an analysis of the Agricultural Marketing Agreement Act, the Court stated: "From this and the whole structure of the Act, it would seem that it contemplates that its policy may be effectuated by a State program either with or without the promulgation of a federal program by order of the Secretary."

Finally, the Court held that, even though 90 to 95 percent of the raisins were ultimately sold in interstate trade, the program, by imposing regulations on growers and processors, " . . . does not impair national control over commerce in a manner or to a degree forbidden by the Constitution."

The decision is of especial importance to producers who raise specialty crops in limited areas. It definitely establishes the right

[3] Agricultural Prorate Commission v. Superior Court, 5 Cal (2d) 550; 55 Pac (2d) 495.
[4] Brown v. Parker (1941) 39 F. Supp. 895.
[5] Parker v. Brown, 11 U. S. Law Week 4096.
[6] 50 Stat 246, 7 U.S.C. 601, et seq. 1937.

of the State to take cognizance of the economic status of its agricultural producers and assist them if possible in averting an economic disaster. In the body of the opinion, which was rendered by Mr. Chief Justice Stone, the statement is made: "Examination of the evidence in this case and of available data of the raisin industry in California, of which we may take judicial notice, leaves no doubt that the evils attending the production and marketing of raisins in that state present a problem local in character and urgently demanding state action for the economic protection of those engaged in one of its important industries."

There has never been any doubt as to the right of the State to adopt such measures as it saw fit to avert physical disasters. It is gratifying, therefore, to see the point established that a State may act to prevent the economic ruin of its citizens.

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COMMENTS ON—"TRENDS IN AGRICULTURAL COOPERATION"

TRENDS in Agricultural Cooperation by E. A. Stokdyk, is an excellent article on business-type cooperatives, but would seem to overlook several significant phases of present cooperative developments. Therefore, these notes are intended to supplement, not in a critical way, the material which Mr. Stokdyk presented before the Western Farm Economics Conference.[1]

To begin with, Department of Agriculture agencies in the Pacific Northwest are broadening the opportunities for *all farmers* to participate in cooperative activities. For the past year, under the pioneering leadership of President A. C. Adams of the Spokane Bank for Cooperatives, quarterly meetings have been held by representatives of State Extension Services, Spokane Bank for Cooperatives, and Farm Security Administration. Actual loan cases have been frankly discussed. Misunderstandings, possible causes for competition, and instances of duplication have been eliminated. The three agencies have been tangibly demonstrating that "cooperation" can also function among agencies serving the cooperative movement.

[1] Paper published in the November, 1943, issue of this JOURNAL.

Another example of this important trend may be found in the way that small and low-income farmers are using the authorities of Farm Security Administration either to participate in existing co-ops or organize new associations. According to the 1940 U. S. Census of Agriculture, a total of 187,178 farms were located in the combined states of Idaho, Oregon, and Washington; and of this total 52,287 farms were less than 20 acres in size and 43 percent received total gross incomes of less than $600. Many of these farmers, of course, are being drawn into war industrial employment. But some are reluctant to desert their small farms for industrial employment because of a haunting fear of the war's aftermath; lack of skill; old age; lack of ability; preference for farming, etc.

In this group Farm Security Administration has approximately 14,000 individual cases. Each one of these 14,000 individual families is encouraged to join a cooperative association. Space is provided in the Farm Security Administration standard farm and home plans for the borrower to itemize various cooperative association fees. During this past year, more than $58,000 has been advanced in the form of loans for participation or membership in cooperative associations in the region.

Many small farmers, however, are located in areas which lack cooperative facilities. If they desire to establish new cooperative facilities, according to page 860 of Mr. Stokdyk's paper, " . . . the Banks for Cooperatives tell members and prospective members, 'You are expected to furnish between 40 and 50 percent of the original capital necessary to finance the fixed assets, and from 20 to 50 percent of the necessary working capital.' " Perhaps this is sound business policy. But the facts are that in many instances, where a sound economic need for a facility exists, farmers lack the 40 or 50 percent. What then is to be the procedure?

In the Pacific Northwest such cases have received technical, financial, and business supervisory assistance from Farm Security Administration. Sometimes Farm Security has advanced loans to individuals so that the 40 or 50 percent could be raised to meet the Spokane Bank's requirements; and at other times, Farm Security, has carried on the cooperative association's entire financing. Whatever the case might be, the Spokane Bank and Extension Service have known of the activities of the Farm Security Administration and have recognized that the work was designed to strengthen, not to weaken, the farmer business cooperative program. In this region

Farm Security Administration is aiding 38 processing and facility-type cooperative associations, all contributing directly to the important Food for Freedom program. Ultimately these associations will be enabled to obtain their financing from the Spokane Bank for Cooperatives.

A second significant trend is in the important field of rural health. In the Pacific Northwest during the past five years 30 groups of small farmers, with the cooperation of the organized medical profession and Farm Security Administration, have established cooperative medical and dental associations. These are voluntary group medical and dental care programs, providing services to rural families at a price they can afford. Limited space permits only this brief reference; but it seems safe to predict that here is a cooperative trend which possesses considerable significance for the post-war period.

Another marked trend is the tendency for well established producer cooperative organizations to ignore the educational foundation of cooperation. Education is basic to cooperative organization. Most cooperative leaders recognize this. G. A. Brown, an outstanding representative of the cooperative dairymen, declared in 1939: "As the Oregon cooperative associations become older and the pioneers of the local enterprises who know at first hand the needs that caused formation of the coperatives cease to be dominant in them, youth education in cooperative marketing will undoubtedly be more needed and aggressively sought by the Oregon cooperatives."[2] If these problems are recognized by cooperative leaders, is much being done about educational activities?

As yet, nothing has appeared in the Pacific Northwest which can compare in scope with the discussion groups which are sponsored by St. Francis Xavier University, Antigonish, Nova Scotia or the Advisory Councils which are maintained by the Ohio Farm Bureau. One large farm supply cooperative in the region has flirted with the idea of developing grass-root study groups. Farm Security has helped its borrowers to organize Neighborhood Action Groups, joint-owners services, purchasing and marketing associations, consumer cooperative stores, etc. All have served an educational function of teaching farmers how to work together.

[2] G. A. Brown, What is Now Done by Cooperatives? Statement presented September 22, 1939, before Marketing Conference with Governor Charles A. Sprague, presiding.

But most successful producer cooperatives have revealed a tendency to judge their organizations strictly by dollar-and-cents values. Most of their emphasis has been on the economics of marketing with minor attention to the broader aspects of cooperative education. The result has been a growing tendency to ignore the cooperative philosophy with its vigorous way of life and to minimize the social values which were emphasized by the Rochdale pioneers, the Swedes, the Danes, the Canadian priests, the Wisconsin and Minnesota farmers, and countless others.

These trends probably are national in scope. Not only are they significant to rural people at war, but their importance for the post-era grows in magnitude.

JOE J. KING

Farm Security Administration

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REVIEWS

Economics of Soil Conservation, Arthur C. Bunce, Ames, Iowa, Iowa State College Press, 1942. Pp. 227. $3.00.

Concern with conservation of the soil has undergone a remarkable development in this country during the last decade. It is not unlikely that the war with its vast demands for products of the soil will deflect the trend and perhaps usher in a new era in conservation thinking and practice. A book which welds the economic thinking of the last ten years into a conprehensive treatise is especially commendable at such a time.

Much of the recent literature of conservation is by crusaders who would make any and all conservation a virtue regardless of cost. Professor Bunce has written the most comprehensive economic treatment of the subject to date. Criteria are established as to when, where, what kind and how much investment in conservation is economic for the individual most directly concerned and for the entire social group. While a certain amount of indiscriminate propaganda may have been, on balance, beneficial in reversing a long-time trend toward depletion of natural resources, a discriminating economic approach is essential to the effective use of the resources devoted to conservation. It is to those who seek such an approach and who wish to devote serious study to the real problems that Professor Bunce's work will appeal.

The first three chapters develop the analytical tools to be used. They are the conventional ones of production economics. Elasticity of production is featured as a useful analytical device that has been too much neglected by agricultural economists. However, its use will not inconvenience those accustomed to other terminology for cost and supply relationships. A distinction is drawn between fertility depletion and soil deterioration in both physical and economic terms. In Physical terms depletion is "the removal of plant nutrients and organic matter through crop removals and leaching when these can be replaced by the use of fertilizer, manure and lime." Deterioration is an impairment of the physical properties of the soil. Erosion is said to be the most conspicuous form of deterioration. On an economic basis deterioration permanently lowers rent while depletion does not. This distinction is used throughout the subsequent analyses.

The next four chapters examine the problems of determining what conservation practices are profitable to the farmer. The basic elements of this analysis are the balancing of present and future returns within the economic framework of costs, prices, interest rates, land values and tenure relationships. However, the writer patiently carries this central analysis through an extended series of variations to take account of the influence of economic changes in a dynamic society.

Professor Bunce's thinking is dominated by the situation in which stores of virgin fertility are present to be exploited and the economic maintenance level is below that of the original level of productivity. Occasional passing reference is made to soil improvement or reclamation, but exploitation comes in for the lion's share of attention. It is true that the relationships in improvement and exploitation are symmetrical, and also that exploitation, or at least that which falls in the category of deterioration, is the greater cause for public concern. However, in the opinion of the reviewer a more balanced treatment would have resulted from increased attention to the economics of soil improvement. The optimum disposition of the productive resources of the nation may well result in the simultaneous exploitation of some soils and improvement of others. This is an idea which seems to gain acceptance slowly. The work under review will not hasten the process.

The last five chapters deal with social aspects of soil conservation; divergencies between individual and social interests, methods and criteria of social control, "measurement in conservation planning," war and conservation, and the formultaion of public policy and action.

The popular idea of difference between individual and social time preference as a justification of social action to bring about conservation is attacked on the grounds that it obscures the real causes of exploitation and does not allow for any limits on desirable public action. The conditions under which social action to achieve conservation is justified are summarized as: (1) when it would be economic for the individual entrepreneur to conserve but he does not, (2) when conservation is not economic for the individual but is economic for society, and (3) when intangible ends desired by the majority of individuals in a democracy can be attained only, by collective action. The first situation may result from custom, lack of knowledge, insecurity of tenure and rationing of credit. Social

action should be directed at basic causes; subsidies or coercion in the case of custom, education for lack of knowledge, tenure reform for insecure tenure, and credit expansion for the final situation. Individual and social interests diverge: (1) when exploitation involves losses or conservation gains which do not impinge on the individual, and (2) when the prices available to sociey differ from those available to the individual. A variety of measures each directed at a specific cause may be needed under these conditions. When intangible ends are desired by society it is essential that they be defined as concretely as possible so that they can be properly related to other ends in the allocation of public funds.

The chapter on war and conservation is of timely interest. The wartime objective is to maximize production over the period of the emergency. Conservation must be subordinated if it conflicts with the production objective. Professor Bunce states these propositions but appears reluctant to accept fully the logical conclusion when he implies that depletion may be permissible but not deterioration. When critical labor and materials must be allocated if deterioration is to be prevented while obtaining maximum production what criteria are to be applied to govern resource allocation for this purpose?

The book as a whole is well done, and will doubtless be required reading for advanced students in this field replacing many of the numerous scattered articles to which previously it has been necessary to resort. The thoroughness with which a rather long series of economic situations is probed with a relatively simple set of analytical tools on an abstract level may cause some readers to wish that more condensation had been undertaken.

R. H. ALLEN

Food Distribution Administration

Input-Output Relationships in Milk Production, Einar Jensen, John W. Klein, Emil Rauchenstein, T. E. Woodward, and Ray H. Smith, U.S. Department of Agriculture, Technical Bulletin No. 815, 1942.[1]

Progress in the provision of guides to the economic combination

[1] For a review of certain aspects of this work see Louis F. Herrmann, Diminishing Returns in Feeding Commercial Dairy Herds, this JOURNAL, this number, pp. 397–409.

of resources, particularly for agricultural enterprises, has been slow. Two reasons, which more than any other, have contributed to this situation are the excessive difficulty and great cost which generally must be faced in establishing the necessary knowledge of physical production relationships. Thus, the important addition to our knowledge of the production functions applicable to milk production, involved in this research report, is most noteworthy. This is particularly true since there are good grounds for calling into question the utility for economic analysis of widely used feeding standards.

The important contribution of this publication is its development, in a thoroughly scientific manner, of the body of data needed for analysis of the economic level of feeding milk cows. The work also contributes to an understanding of some organizational features of the dairy enterprise. The problems attacked are very complex and require the use of many analytical devices to measure the influence of such factors as age of cow, breed, body weight and basic producing ability.

The production data secured showed that "the response to increased feed was less at the high levels than at the low levels —0.6 pound of 4 percent fat-corrected milk for each additional pound of digestible nutrients at the highest level and 1.7 pounds at the lowest level." The most profitable level of feed input depends on production response to feeding, and on the prices of feed and milk. The writers show that for the production functions they have developed it "ranges all the way from no gain at all to more than 5000 pounds of concentrates per year for cows capable of high production . . . ." A chart is provided to facilitate the calculation of the most profitable level of feeding when prices of grain, hay, and milk are known.

DAVID L. MACFARLANE

Foods Administration,
Ottawa

Farm Management in the South, Robert L. Hunt, Danville, Illinois, The Interstate, 1942. pp. 566. $2.20

This book was written for pupils enrolled in classes in vocational agriculture. In the preface the author states that, in his opinion, there is distinct need for such a book on farm management that

deals primarily with southern farm problems. The book is based on the agriculture of the South and the Southwest.

The treatment of the subject is descriptive rather than analytical. Descriptive text and tables illustrating characteristics of southern agriculture, and particularly the agriculture of Texas, dominate the book. The accepted principles of farm management are not stressed so that, to the student, they will appear as the important information to be obtained from the book.

Economic principles involved are mentioned but their relationship to farm managment is only partially developed. For example, capital is mentioned as one of the three (or four) factors of production but capital as a factor of production is not defined. The saw of increasing and diminishing returns is erroneously stated to include only two of the factors of production. (p. 176)

Tabular materials are used freely throughout the text. There is question whether the use of so many tables is advisable in a high school text. It would seem that careful statement of the principles illustrated by the tables with fewer tabular presentations would be more helpful to the high school student. In addition the elimination of some of the longer and more complicated tables would shorten the book materially. Other materials included tend to lengthen the book unduly. For example, it seems hardly necessary to reprint the full summary of the 1940 Federal Outlook Report (Pp. 445–458) to illustrate the types of information to be obtained from outlook reports.

Careful editing and painstaking proofreading would have added to the value of the book. For example, the word data is used, in most cases, with the singular verb and singular pronouns. On page 528, question 3 does not make sense. There are numerous other errors in English and in make-up throughout the book.

In the hands of a high school instructor who is well-grounded in the principles of farm management this text probably could be used effectively. Its strongest points seem to be in the description of southern agriculture and the presentation of problems of southern farm people. However, in the hands of instructors less well trained in the principles of farm management, it is doubtful if the high school students would obtain adequate instruction in farm management.

W. E. GRIMES

Kansas State College

Food Control in Great Britain, E. T. Denhardt, Montreal, International Labour Office. Studies and Reports, Series B, No. 35, 1942, Pp. vi, 272. $1.25.

Food control in Great Britain is extensive and we will probably draw heavily upon the experience there in developing our own programs. This monograph, in consequence, is especially timely and will prove interesting to all concerned with food problems in this country. The study is more descriptive than analytical but the explanation for the choice of procedures necessarily involves a certain amount of analysis. The discussion is centered around four main topics to each of which a chapter is devoted. These are the agricultural policy, the control of supplies and channels of distribution, rationing and priorities, and the price control policy. These chapters together with an opening one setting the problem and one in conclusion complete the book. Important chronological data are provided in the appendix.

Great Britain depends a great deal on imported foodstuffs and the war has seriously hampered her power of importation. The major agricultural policy has been directed therefore toward increasing domestic production. Subsidies have been granted for plowing up grass land and for the introduction of certain approved practices. One interesting program has involved the rating of farms according to quality of management by local committees and an endeavor to eliminate the operators of the more poorly operated farms. The results of the agricultural policy are impossible to appraise accurately at the moment but it appears certain that production has been increased considerably.

The experience in food control indicates that the key to success is to secure control at the source and to extend it over the channels of distribution. This has been easy where the foodstuff was largely imported but becomes extremely difficult for a commodity such as eggs. The British policy has been to cooperate fully with the existing trade agencies and reforms have been left generally for the post-war period. In all cases control of supplies and of demand through rationing have worked out best when applied early, although part of this may have been due to leaving the more difficult cases to the last. At present there is a wide variety of rationing procedures. The government allots to each person a fixed quantity of margarine and butter, cooking fats, bacon, sugar, tea, cheese and preserves. Meat is rationed by value; and canned food is rationed

by the points system. Consumers are required to register for eggs, onions and milk, and supplies are distributed on the basis of this registration. The retail cost of food as represented by the items in the index of the Ministry of Labour has been stabilized through the fixing of prices and subsidies have been employed to increase supplies.

Those who have been concerned with the difficulties in our own program may take heart over the fact that others have had similar difficulties and that these are inherent in the nature of the problem. There have been some differences of view point between the Ministry of Food and the Ministry of Agriculture, with the former much influenced by consumers and the latter by producers. The coordination of the work of area commodity officers and the Divisional Food Officers has been a difficult administrative problem. The extent to which the trade should be incorporated in the operation of the various schemes has been a moot question. The extent of the black market is unknown, but in October 1941, there were 3,130 prosecutions for the violation of food orders. On the whole, however, the program has been well carried out.

WARREN C. WAITE

University of Minnesota

Farm Records, Second Edition, John A. Hopkins, Ph. D., Iowa State College, Ames, Iowa; Collegiate Press, Inc. 1942. Pp. xiii, 258, $2.75.[1]

The second edition represents a valuable improvement in Farm Records. Dr. Hopkins has added a discussion of the principles of double entry accounting to meet the needs of students who have not had a course in principles of accounting. Other less important changes in content have been made. Illustrative data have been brought up to date. The chapters have been rearranged, giving an organization superior to that in the first edition.

The second edition of Farm Records is divided into five sections. Part I covers "planning the farm business and the physical records." It includes chapters on the farm budget, production records, feed records, and labor records. Emphasis is placed upon the importance of complete, reliable data on the physical performance of the farm.

[1] The first edition of Farm Records was reviewed by J. E. Wills in this JOURNAL, Vol. XIX, No. 4, pp. 958–959, Nov., 1937.

Part II covers "the farm inventory—valuation." It includes chapters on taking the inventory, valuation, depreciation, and analysis of the net worth statement. In general, this discussion is very effective. But the discussion of the theoretical basis for valuation is confusing. It is indefinite and seems to have little relationship to the rules finally suggested.

Part III covers "financial accounts." It includes chapters on double entry accounting methods, multiple column records, and single entry records. The discussion of double entry accounting methods is quite satisfactory, in view of the limitations of space. The discussion of single entry records is inadequate. It does not present a complete and balanced outline of the purposes or methods of single entry accounting. Instructors using this book must be prepared to provide supplementary information for this topic.

Part IV covers "analysis of the farm records." It includes chapters on income statements, current use of the records, analysis of the year's records, efficiency factor analysis, analysis of enterprises, and use of accounting data in budgetary control. This is an effective discussion of methods of analysis. Workers in the field will find many of their pet methods missing, but such omissions must be expected. One possible fault is excessive stress on the objectives of the analysis and inadequate treatment of the mechanics of converting the recorded data into usable form. For example, net increases in the value of hogs and the weight produced are used in the analysis, but there is no mention of the methods of deriving these figures. Students need instruction in these details.

Part V covers "some special problems," such as perennial crops, partnership accounts, and accounts for landlords. Relegation of these problems to the last chapters in the book represents a distinct improvement over the first edition.

Unfortunately, the philosophy of this book is primarily that of double entry accounting. Although definite supporting data are not available it seems safe to say that a large majority of records kept by farmers in the United States are single entry. Most of the cooperative farm management associations use single entry methods. This indicates the practical value of single entry accounting methods because the workers in these associations maintain close contacts with farmers and their problems from the time records are started until the analyses are completed.

The big advantages of double entry accounting are (a) flexibility,

(b) usefulness of the data when arranged in ledger accounts, and (c) ease of checking when a cash account is included. (a) Flexibility in records is an asset only to the accountant who is trained in accounting methods. Most farmers cannot capitalize on this asset. They find that a good single entry book is a valuable guide in accounting. (b) Many single entry books are similar to a ledger account. A record kept in a good single entry book will be more valuable and usable than that in a double entry account book arranged by the average farmer. (c) Complete checking of cash in farm accounting is very difficult and is unnecessary. Funds from the same purse are used for farm and personal purposes and are handled by several members of the family. Most farmers are not seriously interested in absolute accuracy in their records even if it were possible to obtain it.

Since the philosophy of the book is developed around double entry the discussion of single entry accounting books is inadequate. The multiple column record is discussed largely as a double entry tool, but most of these books have been prepared as single entry books. there is no clear description of the numerous single entry books where the inventories, purchases, sales, and other pertinent facts for each major enterprise are located on facing pages where the data can be easily checked and are readily available for analysis.

A valuable feature of Farm Records is the emphasis placed upon the methods of analyzing the records. This is one of the most important and most difficult parts of farm accounting, and yet is a part that is omitted from practically all farm accounting texts.

In spite of its inadequate treatment of single entry, this is one of the best books now available as a text or for reference purposes for courses in farm accounting.

S. A. ENGENE

University of Minnesota

Wartime Price Control, George P. Adams, Jr., American Council on Public Affairs, Washington, D. C., 1942, Pp. x + 153. Cloth edition: $3.00. Paper edition: $2.50.

This little book is easy to read in an evening at home. Eight of the 10 chapters deal with the situation in World War 1, with separate chapters on food and fuel control. The cautious and tardy intervention of Government in the wartime economy in 1917–18 is described with some analysis. However, it seems that for a writer

unhampered by official censure, more might have been done to analyze the experiences of World War I as a guide for the wartime price administrators of today.

In the discussion of price-fixing techniques the Department of Agriculture is listed as having fixed prices on agricultural equipment and machinery, (p. 56). The Department of Agriculture, through its Office of Farm Equipment Control performed many services, but did not fix farm machinery prices. In response to an inquiry from Congressman W. E. Cox, Secretary of Agriculture, D. F. Houston, replied in the latter part of 1918 that: "Neither this Department nor, as far as I am informed, any other executive branch of the Government has fixed the prices of farm implements . . . "

Any one interested in the technique, problems, and effectiveness of price fixing today—and who is not—may enjoy the summary of experiences in World War I as presented in chapters V, VI, and VIII.

The author had made a comprehensive survey of the field and has summarized his material with efficacy for his readers. Numerous footnotes provide a good bibliography for those in search of more detail.

ARTHUR G. PETERSON

Bureau of Agricultural Economics

Our Landed Heritage: The Public Domain, 1778–1936, Roy Marvin Robbins, Princeton, Princeton University Press; London, H. Milford, Oxford University Press, 1942. Pp. 450. $5.00.

The public domain of the United States once included all of the territory now encompassed in thiry-one States. During most of the years of nationhood, conflicting economic interests contended in the political arena for control of the lands of the public domain. The dirt farmers, the planters, and the speculators each had their triumphs but they were finally displaced in the struggle by the mining, grazing, lumbering, and transportation interests. The land question was an important ingredient of the sectionalism that led to the Civil War, and the conservation movement is a starting point of a new epoch of American history which the Nation is entering. The withdrawal of all federally-owned public lands from private entry in 1935 marks the end of the public domain in the historical sense, but most, if not all, problems concerning land and its util-

ization in the future derive from the policies concerning the public domain during the period covered by this volume.

In his preface, Professor Robbins states that "This volume presents perhaps the first attempt to integrate American land history with the other forces that have shaped our civilization." He adds: "It is not all political, economic and legal; considerable social history is inextricably bound up with public land settlement, which helps to make the whole story livelier and more interesting. This volume constitutes not only a study in history and in public administration, but also a study in American democracy." In general, the story is written from the viewpoint of the West, but there are times when this approach is obscure.

The volume is the product of practically a decade of research and writing. Nearly all of the printed books pertaining to the subject have been utilized. Newspapers have also been used very extensively, but so far as this source is concerned, Professor Robbins, like many other historians, may have taken the editorial comment and news selection of the newspapers too much at face value in some instances. Newspapers are assuredly the basic source of data on public opinion, but we must, so far as time permits, seek to ascertain whether editors and publishers were guiding or following community sentiment and likewise the motives for the courses they took. The documentation also provides ample evidence of extended use of printed government documents. Except in two chapters, the same cannot, however, be said for unprinted government records.

Our Landed Heritage is not a definitive work, but its author would probably be the first to concede this point. It includes generalizations that are not applicable to all regions and minor errors of fact. It does not provide the analyses of the social implications of the policies that some readers may wish. These faults are, however, largely chargeable to the subject rather than the author. As a practical matter, we cannot expect a history of the public domain that will meet all tests until the many phases of the subject have been covered by monographic studies.

In view of this situation, Professor Robbins is to be commended for his bravery, assiduousness, and hardihood in assaying a wellnigh impossible task. He has provided a modern synthesis that will be our main reliance for data on all phases of the subject for considerable time, and we should, therefore, be duly appreciative.

EVERETT E. EDWARDS

Bureau of Agricultural Economics

The Standard of Living in 1860: American Consumption Levels on the Eve of the Civil War. Edgar W. Martin, Chicago; The University of Chicago Press, 1942. pp. x, 451. $4.50

This book is a monograph on consumption in the United States in 1860, describing the several goods comprising the level of consumption at that time. Very little generalization is attempted. The book is a descriptive catalogue of items collected from the available literature, and classified by the usual family budget categories of food, housing, clothing, etc. It illustrates a type of period monograph on the content of consumption that is notably lacking in the literature of American economic history. The material in the volume is not amenable to brief summarization, but it has been gathered carefully, reported interestingly, and it will serve at least to qualify superficial historical generalizations about the ways of life in the United States just before the Civil War.

HOWARD W. BEERS

University of Kentucky

The Economics of Total War, William H. Spiegel. New York, D. Appleton-Century Company, 1942. 410 pp.

Economic Problems of War, George A. Steiner and associates, New York, John Wiley & Sons, Inc., 1942. 644 pp. $3.50.

These two volumes are designed primarily for students in courses in the economics of war, and for citizens seeking an understanding of the changes that war has wrought in the entire fabric of our economic and social life. Despite the common ground that they cover, the two books are strikingly different in viewpoint, objectives, and content.

As is suggested by the title that he selected, Professor Spiegel's book is broadly and predominantly theoretical in its approach to the problems of the modern wartime state. His first two chapters are concerned with the economic causes of war, and with the nature and impact of total war. Ensuing chapters deal with the manpower requirements for total war, the impact of the war effort in real terms, the role of the price system in a war economy, labor in the war, wartime control of production and consumption, the supply of strategic materials and foodstuffs, international economic relations and economic warfare, and war finance. A brief final chapter looks ahead with optimism to the task of postwar reconstruction.

The more dispersed character of Professor Steiner's volume is

equally well suggested by its title. It contains twenty-six chapters, contributed by an even larger number of authors, dealing with various phases of wartime organization and operation. Integration is supplied by an over-all plan of organization, and by an introductory chapter by the editor, which, with a chapter on the resources and capacity of the United States, comprises Part I, the economic background of a war economy. Part II, on organizing an economy for war, sketches the war organization of Great Britain, Germany and Japan. Part III is concerned with major phases of contemporary war organization in the United States, including price control, fiscal policy, monetary policies and organization, consumer credit control and rationing, control of industrial production, and the financing of war production. Part IV is devoted to problems in selected areas of economic activity, including the labor market, transportation, strategic materials, retailing, housing, insurance, and agriculture. Part V is focussed on post-war economic problems such as the cost of the war, reconstruction, the economic bases for peace, and the outlook for capitalism.

Despite the fact that his book has little more than half the bulk of the Steiner volume, Professor Spiegel, in the opinion of this reviewer, has been able to give a considerably clearer view of the over-all pattern of modern war. This is in part due to the fact that although a series of essays by independent authors may achieve a formal unity by conformity to a general plan of organization, each paper must still achieve unity by itself. The close interlocking of different phases of wartime organization and life is difficult to demonstrate, without a great deal of repetition, where each phase is being treated by a different author.

In part, however, Professor Spiegel's greater success is due to the fact that he has approached the problems of the war economy from a theoretical viewpoint, and has for the most part relegated factual material to an illustrative role. Although he has described administrative organizations and has made use of facts and figures he has been able to hold such details in perspective, and, as a consequence, has escaped much of the appearance of dating that results when the foreground is occupied by the minutiae of contemporary organization and operation. In this respect the chapters in the Steiner volume show great variation; an extreme but not a typical example of preoccupation with the administrative details of a particular problem appears in the chapter on industrial production

controls, where nineteen pages out of twenty-five are concerned with the application of specific orders, forms, and regulations. The later chapters in the book, dealing with the prospects of the post-war period are, in the nature of things, less tied to the conditions of the moment, and more immune to the withering touch of obsolescence. In its treatment of these post-war problems the Steiner volume has a definite edge over Professor Spiegel's brief forecast of the future, but it is on the whole less successful than his in portraying the basic forces, conditions, and considerations that give significance to the details of contemporary organization and events.

A. M. McISAAC

Princeton University

French Predecessors of Malthus: A Study in Eighteenth-Century Wage and Population Theory. Joseph J. Spengler, Durham N.C., Duke University Press, 1942. Pp. ix, 398. $4.50.

This is a thoroughly competent and scholarly study of eighteenth-century French theories of population and wages. It consists of an analysis of the pre-Malthusian literature in France including the writings of many clerics, statesmen, bureaucrats, publicists, philosophers, and economists. After a brief survey of pre-eighteenth century population theory, Dr. Spengler devotes eight chapters to the neo-mercantilists and the agrarians, the repopulationists, Cantillon and the theory of luxury, Quesnay and the physiocrats, the philosophers, the nonphysiocratic economists, and the extreme antiphysiocrats. The book closes with a chapter of conclusions and interpretations. As the author points out, "The description and analysis of economic thought, as it developed in France in the eighteenth century, present difficulties; for while it saw the replacement of an older way of thought by new types of analysis and new sets of ethicoeconomic values, it did not witness the complete ascendency of any one homogeneous and consistent value scheme." (p.vii)

A survey of pre-eighteenth-century thought discloses nothing resembling a well developed theory of population growth or of wages. The medieval writers treated of population only incidentally to a consideration of moral problems. They looked upon large families and population growth as a sign of God's favor and as welcome to both the individual and the community. With the breakdown of medievalism and the development of mercantilism, population

growth took on political and economic significance. Although there was still no systematic theory of the determinants of population, a large and growing population was looked upon as contributing to the wealth and power of the state. The spectre of overpopulation was unknown. This belief in the beneficence of population growth led to many steps to encourage it, culminating eventually in the decrees of Colbert.

While the writers on demography in the first half of the eighteenth century were handicapped by the absence of an adequate frame of reference, "In the second half of the century . . . the outlines of such a frame of reference began to appear, and men began to think in terms of resource growth and allocation, factor mobility, and interoccupational balance within a comparatively limited area or economy" (p. 353). This frame of reference derived in large part from the observation of economic processes on the one hand, and the notions of equilibrium developed by the physical and natural sciences on the other. Such limited dynamic elements as were incorporated in this reference frame "were derived from sensationalist psychology or based upon observations concerning the progressive character of applied science." The population theories reviewed consist of three sets of propositions: (1) those concerning the effects of population growth and of variations in the rate of population growth, (2) those concerning the determinants of population growth and of its variations, and (3) those representing attitudes of approval or disapproval concerning trends in population growth or policy.

Concerning the determinants of population growth there were many views. John Law believed that the volume of employment in a country determined to a large extent its strength and populousness and that employment in turn depended upon the volume of money in the country. Most writers emphasized the importance of the state of agriculture. Some emphasized the importance of manufactures. Several urged the significance of the distribution of wealth and income between various social classes and the propensity of society to luxurious consumption. Many recognized the effects of such social institutions as the church and its requirement of clerical celibacy, social customs and moral standards, taxation, and the system of public relief. There was general recognition of the significance of the positive checks of poverty, malnutrition, famine and war. A few recognized the importance of migration and colonial expansion.

Throughout all the literature, however, runs a recognition of the importance of the supply of subsistence, conceived generally in the narrow terms of a cereal diet. While it was agreed that subsistence sets at least an upper limit to population growth, most writers did not posit any such rigid relationship between the growth of subsistence and the growth of population as did Malthus at the end of the century.

The essence of the Malthusian theory was a claim that the size of the population is determined by the supply of subsistence and that the wages of labor in the long run will approach the minimum level required for subsistence. While Malthus recognized that certain factors might delay the pressure of population on subsistence and that the exercise of moral restraint might alleviate the ravages of the positive checks, the burden of his theory was pessimistic. He had little but scorn for the confidence in the perfectibility of man which was characteristic of the Frenchman Condorcet and of his English counterpart Godwin. Nor could he see anything but waste and futility in the poor laws and other measures for the relief of the poverty stricken.

Is this pessimism to be found in the French predecessors of Malthus? Although most of the elements which go to make up the Malthusian theory are to be found in the eighteenth century French literature, the pessimistic conclusions are not there. "Eighteenth-century French writers, although frequently aware of the tendency to overpopulation and of its ill effects, contributed greatly to the formulation of the optimistic thesis, but not so much to that of the pessimistic antithesis. . . . Population pressure was sometimes viewed as a source of poverty; charity was condemned on the ground that it wasted resources and fostered idleness; increase in the supply of workers was at times viewed as a cause of unemployment and of reductions in wages; and it was said that war and the other positive checks were not necessary to prevent overpopulation; but the Malthusian thesis was not clearly posited and evaluated until the closing decade of the century" (pp. 366–368). At that time Condorcet considered the possibility of eventual population pressure, only to reject it with an assurance that if this should threaten, enlightened man would take appropriate measures to prevent it.

Wage theories in eighteenth-century France were of two general sorts, the exploitation theories and the nonexploitation or superficially competitive theories. The proponents of the former theory

visualized society as divided into two classes, the property owners and the propertyless. The wages of the latter were believed to be determined by the arbitrary action of the former. Unless required by the state to do otherwise, the property owners never paid wages higher than those required for subsistence. The nonexploitation theorists believed that wages were determined by the impersonal forces of supply and demand. They were, however, unable to give their theories a sound structure, since they failed to formulate an adequate theory of demand for labor or an adequate theory of competition. Throughout their writings ran a vaguely formulated subsistence theory and elements of a wage fund doctrine. A few writers, such as Cantillon, Condillac, Turgot and Canard, gave some attention to the determinants of wage differentials.

Although many writers recognized that subsistence placed a limit upon population growth, the laws of return in agriculture and industry were not an integral part of the analysis of population growth or wage theory. Vauban at the beginning of the century had implied that in the absence of technological improvement a point would eventually be reached where agricultural output could not be increased. Turgot, alone, however, recognized the three phrases of increasing, constant and decreasing returns.

J. P. MILLER

Yale University

National Income and Its Composition, 1919–1938. Simon Kuznets. New York; National Bureau of Economic Research, 1941. 2 vol.; pp. XXX, 929. $5.

The volumes under review contain a summing up of Professor Kuznets' long labors in the field of national income. No one who is familiar with his previous work will need to be urged to read *National Income.* The discussion of theoretical issues is balanced and incisive, the interpretation of results far transcends the mere verbalization of tables, and the enormous statistical labors are preformed (so far as this inexperienced reviewer can tell) with unfailing skill and patience. The general familiarity of readers of this Journal with the form and content of national income estimates and with Professor Kuznets' high position in this field suggest, therefore, that this review is better devoted to certain debatable issues than to a general survey and harangue to purchase. Three such issues will be dis-

cussed briefly: the concept of income; the treatment of government; and the accuracy of the estimates.

There are at least three—and doubtless more—important concepts of national income which might serve as bases for measurement:[1]

1. Total net income, i.e., the value of consumers' goods and services produced during the year plus additions to capital;
2. Monetary net income, i.e., that portion of total net income which exchanges for money; and
3. Net welfare income, i.e., that portion of net income (or of monetary net income) which arises out of activities which (in the opinion of the estimator of national income) yield satisfaction.

Kuznets follows the third definition (with partial inclusion of non-money income) and in fact denies validity to the first two concepts. Two grounds for this denial are advanced (p. 4): the former concepts include illegal and transfer incomes for which no "real" service is given; and, more generally, national income *should* measure the "positive contribution of the country's economic system to the needs of its members." To this position two replies can be made.

First, the first two definitions are relatively unambiguous, they are very useful, and, indeed, they represent all that the economist quâ economist can measure. It is not necessary to deploy the established methodological conclusions regarding the neutrality of the economist toward the ends of economic activity. Rather it can be argued more positively that definition (1) is most useful in general economic analysis, for when broken into its components it permits a study of all uses of resources and of interrelationships between all (not merely the legal or desirable) sections of the economy. And definition (2) is appropriate to the monetary analyses in which perhaps the chief policy applications of national income figures are made.

Second, it is surely beyond argument that Kuznets' figures for national income, resourceful and painstaking as their compilation is, bear little resemblance to those which would portray the com-

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[1] The corresponding gross products need not be discussed separately. Most of the important problems of technique will also be passed over. One such problem raised by Kuznets, however, calls for brief comment. He argues that in valuing non-money income at market prices of corresponding goods, the non-money income is overvalued since if it appeared on the market the prices would fall (p. 23). This result does not hold if the corresponding demand is also added to the market demand; cf. P. H. Wicksteed, *Commonsense of Political Economy*, II, 785 ff.

mon-sense definition of economic welfare. (The common-sense definition is used here to avoid argument, a property attributable to its vagueness.) Vast amounts of money and non-money income are omitted, but roughly estimated (Ch. 9). The goods which are included embrace most of the useless and many of the harmful commodities which our society has devised. Again, Kuznets does not include leisure in national income so that, ceteris paribus, a shortening of hours entails a decline in national income. The project, finally, encounters discouraging obstacles. Monopoly goods are not revalued as competitive prices because (1) this is obviously impossible in a broad study, and (2) the persistence of monopolies shows that society accepts them, explicit laws to the contrary (p. 27). This latter argument is in a certain sense valid, but in exactly that sense one would argue that illegal activities are also accepted by society and the income they yield should be included in national income. There appear to be no significant differences between failure to eliminate monopolies and failure to eradicate prostitution or bootlegging, and of course many monopoly practices are in violation of the ubiquitous criminal laws.

Our second point is the measurement of the governmental contribution to national income. Kuznets' procedure is to measure governmental saving by the excess of increase of assets over increase in debt, and to measure current services by taxes paid, as the closest equivalent to the prices at which private output is valued. Finally, a certain part of government expenditures are for the benefit of business; this part is assumed to be equal to the yield of business taxes, which are accordingly excluded from national income to avoid double-counting.

The choice of taxes rather than the alternative basis of costs in evaluating government services seems unfortunate. In the current fiscal year the tax basis will exclude approximately one-third of the value of the products of the economy's resources. At other times fiscal policy may call for deficits in depressions to attain monetary objectives quite aside from any question of the value of government services. Since tax yields are normally more flexible than expenditures, the tax basis is likely to misallocate services between years.[2]

[2] It is argued that "since the purpose of studying short term changes is to ascertain how the economic system responds to varying conditions, it seems preferable to use a valuation basis that is more sensitive to changing conditions" (p. 33). Waiving the fact that this is not true in wartime, do we wish to introduce sensitivity if the system is not sensitive?

Finally, if one accepts the desirability of the total net income approach, the argument that taxes represent prices becomes irrelevant.

One may also dissent from the assumption of equivalence between benefits of public expenditures to business and the amount of business taxes. This has no obvious merit other than computational ease over assuming that twice the square root of business taxes equals benefits to business. The distribution of income between industry groups is distorted by the practice; it is hard to believe that in pre-war years one-quarter of federal aid to business accrued to the tobacco and liquor industries. Recent trends in business taxation imply a dubious doubling of assistance to business. Space does not permit of a discussion of the general theoretical issues, but I should like to express a preference for the assumption that business benefits are either zero or equal to the costs of those functions which are rather clearly allocable to business.

The final point to be noticed here is the accuracy of the estimates. Formal statistical techniques are inconclusive in this field because (1) truly independent estimates of national income are not available, and (2) the usual problem in time series, the determination of the number of independent observations, would still require solution. As an alternative check, Professor Kuznets and two experienced assistants estimate the "probable maximum error" of income figures by industry and by income type (Ch. 12).[3] As a sample of the results, all three investigators estimate this error in national income to be about 20 percent throughout the period (p. 524). The absolute size of the estimates, however, is of little significance, — after being made they were increased uniformly by 50 percent in the light of other information (p. 505); the estimates bear chiefly on relative errors of different industries and income types.

Certain questions may well be raised concerning this procedure. The meaning of "probable maximum error" is most uncertain, — would one expect true values to fall within the indicated range in 5 or 50 percent of the cases? Certain of the statistical procedures may well introduce much larger errors than those present in the raw data. For example, the assumption that banks and insurance companies are merely aggregates of individuals and pass on interest and dividends to depositors and policyholders (p. 408) may overstate income payments to individuals by as much as 2 billion dollars.

[3] Interpolation techniques are also tested against known years (Ch. 11); the errors on this score average slightly less than 10 per cent.

There is some evidence of the common tendency to put more faith in figures compiled by someone else. Thus the average of the estimates of error of income originating in agriculture, a component resting on well-known Bureau of Agricultural Economics series, is only 12 percent, which is surely rather low for this field of notoriously poor data. The question of year-to-year changes is investigated in general terms (pp. 529–35) but this treatment could well have been supplemented by an examination of cyclical biases.

It may be well to emphasize that criticisms of the foregoing types are easy to make in a field as new and as difficult as that of national income measurement. They should not obscure the great achievements in Professor Kuznets' work.

GEORGE F. STIGLER

University of Minnesota

The Theory of Competitive Price, George J. Stigler, New York: The Macmillan Company, 1942, Pp. vii, 197.

Stigler's preface starts out: "This is a preliminary edition of a textbook in advanced economic theory . . . . This present volume covers the usual introductory material on methodology and the theory of competition. In the not-too-distant future I hope to add sections on imperfect competition, multiple products, capital theory and certain other topics which usually receive attention in advanced theory courses." A later paragraph includes the statement ". . . this is a textbook, a noun for *unoriginal*" (italics his).

These quotations indicate the general nature of the book. In view of its unoriginal nature, the references to the source material on which it is based serve as an additional guide to its contents. The index makes 16 references to Marshall, 14 to Knight, and a few in each case to R.G.D. Allen, J.M. Clark, F.Y. Edgeworth, J.R. Hicks, A.C. Pigou, L. Robbins, Adam Smith, and M. E. Walras.

The authorship of the book predisposes one to expect it to be a good job well done, and examination bears out this expectation. The treatment is authoritative, the style clear and refreshing. A rigorous exposition of the "competitive price" part of elementary economics is provided, at the appropriate level for an intermediate course for undergraduates. The book is good orthodox fundamentalist theory. It will be useful to teachers of economic theory when they have students again after the war.

It may be some time before the book can be completed by the

addition of the proposed sections on imperfect competitions, etc., for economists don't have much time to write textbooks these days. I hope that when those sections are written, they will deal with the more recent extensions of economic theory that bring it closer to grips with the major economic problems of modern times—the problems of total employment, fiscal policy, managed money, and so forth—that are the chief concern of general economists today. For as Richard Tawney said, "Life is a swallow, and theory a snail" and text-books have a tendency to lag behind.

GEOFFREY SHEPHERD

Iowa State College

The Structure of Netherlands Indian Economy, J. H. Boeke, New York Institute of Pacific Relations. 1942, pp. x, 201 $2.50.

Dr. Boeke was for many years an official of the East Indies Government; for the past decade he has been professor of colonial economics at Leiden University. He has long held an enviable reputation for original work in his field.

According to Professor Boeke two distinct and antithetical economies operate side by side in the East Indies, and in all Eastern tropical countries. These economic systems are sometimes referred to as "Eastern" and "Western," "indigenous" and "foreign." The term "tropical colonial" economy is also sometimes used. Boeke prefers the terms "capitalistic" and "non- or pre-capitalistic" as most accurate and logical indicating the antithesis which exists between the two. Now Boeke argues that the theory of Indies economics are so different from classical Western economics that the former cannot be considered as a branch of the latter. The two systems spring from utterly different philosophies of life and attitudes toward life. "Classical Western economics," writes Boeke, "is based on certain fundamental principles, namely: a) unlimited wants on the part of the economic subject; b) money economy as the system under which the subject lives; c) individualism as characteristic of the economic subject." With respect to these fundamental principles "Oriental economics is essentially different from Western; and hence Western economic doctrines are not, or are only partly, applicable in the Orient."

From this fundamental point of view the author describes and analyzes the economic life and structure of the Indies. The result is

an illuminating study. However, the reviewer strongly doubts whether the two economies are as separated and as sharply antithetical as Boeke describes them. He has a fruitful thesis but at times he presses it too far. During the past two decades there has been much integration, and especially since the beginning of the World Depression. The improvement of roads, economic and agricultural information service, centrals for native export products, the production restriction schemes, the food supply, kapoc, coffee and copra funds, the Javanese migration to Sumatra and the Celebes, the rapid industrialization of Java since 1937 and the general increasing intensity of governmental control—all these were bringing about an economic and cultural integration. The motivations of the indigenous society were undergoing change, due to penetration of Western goods and the presence of Westerners. As Dr. B. Schrieke, an outstanding East Indies official once tersely put it, "The presence of Europeans has created a different norm of social appreciation." The emphasis of Professor Boeke is, however, not without value, for the integration of the originally separated indigenous and Western economic systems into a harmonious whole, the merging of the two societies into a unit, is the chief and at once the most difficult problem of colonial policy and administration. And Boeke's studies constitute extremely valuable contributions to the understanding of the problem.

AMRY VANDENBOSCH

University of Kentucky

NEWS ITEMS

The Northwest Farm Managers Association held its Thirty-fifth Annual Meeting at Fargo, North Dakota, February 23, 24 and 25, 1943. This was one of the best attended and most successful meetings of the Association. The Department of Agricultural Economics and the Agricultural Economics Club at North Dakota Agricultural College were host to the meeting.

The Inter-American Statistical Institute has announced the publication of Volume I of a new quarterly journal of statistics called Estadistica. The first issue emphasizes continental characteristics. Juan de D. Bojorquez, Mexico, D. F. is Director and Editor-in-Chief, Halbert L. Dunn, Census Bureau, Washington, D. C., is Secretary-General of the Institute.

A study dealing with the monthly and geographic production and shipment of fruits and vegetables is now under way in the Bureau of Agricultural Economics. Data on such shipments of canned fruits and vegetables are for the first time available through the cooperation of the Office of Price Administration and the Department of Commerce.

Regional Research. The Bureau of Agricultural Economics has found that the arrangements for cooperative handling of regional research problems in livestock marketing have proved to be very helpful in connection with some current wartime marketing problems. The Corn Belt Livestock Marketing Research Committee, composed of representatives of 13 Corn Belt States and the Bureau, has furnished materials used in making administrative reports for the guidance of Washington officials. The most recent of these reports deal with discrepancies between expected and actual hog slaughter, and the slaughter of dairy cows. Summaries of these reports were prepared for inclusion in the Marketing and Transportation Situation issued by the Bureau. The New England Research Council, formed to promote cooperative research by the New England Experiment Stations and the Bureau, also is unearthing material useful to officials administering wartime marketing programs. As soon as the pressure of war work permits, other cooperative arrangements of this kind are anticipated in dealing with the regional and national phases of marketing problems. This is one way in which the results of research conducted in the states having more than state-wide significance can be brought to the attention of those responsible for interstate action programs.

Organization of Food Distribution Administration. The work of several agencies of the U. S. Department of Agriculture and of food units of the War Production Board was brought together to form the Food Distribution Administration under Executive Order 9280 of December 5, 1943.

The realignment merged in the Food Distribution Administration, the former Agricultural Marketing Administration, the Food Division and other food units of the War Production Board, the Sugar Agency of the

Agricultural Conservation and Adjustment Administration, the administration of the Meat Inspection Act and the 28-Hour Law formerly in charge of the Bureau of Animal Industry, and that part of the Office of Agricultural War Relations concerned primarily with food distribution.

The organization of the Administration is as follows:

Director, Roy F. Hendrickson

Deputy Directors, C. W. Kitchen, Ralph W. Olmstead, J. S. Russell, E. A. Meyer

Special Assistant to the Director, Arthur C. Bartlett; Assistant to the Director, S. R. Newell; Assistant to the Director, Norman Leon Gold; Economic Advisor, Budd A. Holt

Chief of Requirements and Allocations Control, John M. Cassels

Under Deputy Director, C. W. Kitchen; Assistant Deputy Directors, Gordon Peyton, Sylvester R. Smith

Chief of Cotton and Fiber Branch, Carl H. Robinson

Chief of Dairy and Poultry Branch, Tom G. Stitts

Chief of Fats and Oils Branch, R. W. Capps (Acting)

Chief of Fruit and Vegetable Branch, W. G. Meal

Chief of Grain Products Branch, E. J. Murphy

Chief of Livestock and Meats Branch, H. E. Reed

Chief of Special Commodities Branch, H. E. Albin

Chief of Sugar Branch, Joshua Bernhardt

Chief of Tobacco Branch, Charles E. Gage

Under Deputy Director Ralph W. Olmstead, Assistant Deputy Director, Otie M. Reed:

Chief of Compliance Branch, J. M. Mehl

Chief of Program Liaison Division, J. P. Hatch

Chief of Program Analysis and Appraisal Branch, F. V. Waugh

Chief of Transportation and Warehousing Branch, W. C. Crow

Six administrative divisions

Under Deputy Director J. S. Russell, Assistant to the Deputy Director, Marcus J. Gordon:

Chief of Civilian Food Requirements Branch, Russell M. Wilder

Chief of Civilian Program Branch, C. F. Kunkel (Acting)

Chief of Nutrition and Food Conservation Branch, to be designated

Under Deputy Director E. A. Meyer: Assistant to the Deputy Director, Kenneth W. Berkey:

Chief of Facilities Branch, J. B. Wyckoff

Chief of Processors Branch, Josiah G. Fort (Acting)

Chief of Wholesalers and Retailers Branch, Daniel A. West

Chief of Food Industries Labor Branch, to be designated

Regional Administrators of the Food Distribution Administration and the Marketing Reports Division Chiefs:

	Regional Administrators	*Marketing Reports Division Chiefs*
Northeast Region	Buell Maben	Milliard C. Faught
Southern Region	James H. Palmer	Harry Carr
Southwest Region	Lester J. Cappleman	Meno Schoenbach

Great Lakes Region	E. O. Pollock	Don E. Rogers
Midwest Region	D. E. Cronin	Joe Graham (Acting)
Rocky Mountain Region	Leonard R. Trainer	A. M. Trachman
Pacific Region	Merritt A. Clavenger	Don Walsh

Ernest K. Ahrendes, formerly with the Office of Land Use Coordination, is now working in the Division of Farm Management and Costs, Bureau of Agricultural Economics, Washington, D. C., as Agricultural Economist with special reference to Western agriculture.

R. H. Allen, Associate Professor of Land Economics, University of Kentucky, has joined the staff of the Food Distribution Administration, United States Department of Agriculture.

Don Anderson, Associate Professor of Agricultural Economics, University of Wisconsin, is now on leave with the Office of Price Administration, Washington, D. C.

W. W. Armentrout, Head of the Department of Agricultural Economics, West Virginia University, has been appointed Rent Administrator of the Morgantown Defense Area.

L. Jay Atkinson is on leave from the University of Connecticut with the staff of the Division of Farm Management and Costs, United States Department of Agriculture, as an Economist. Mr. Atkinson was an Assistant Professor in the Department of Agricultural Economics.

Glen T. Barton has joined the Division of Farm Management and Costs, Bureau of Agricultural Economics, and will assist in the research projects on farm labor in the Washington, D. C., office.

Ronald C. Bentley is on leave of absence from Iowa State College, conducting a study of grain warehouse inspection for the Food Distribution Administration.

Carl N. Berryman, formerly of the University of Wyoming, has joined the staff of the Department of Farm Management and Agricultural Economics, State College of Washington.

J. F. Booth, Associate Director of Marketing in Charge of Agricultural Economics, has been appointed a member of the Canadian Agricultural Food Board. This Board was created in recognition of the new division of responsibility between the Canadian Wartime Prices and Trade Board and the Department of Agriculture, which will place more responsibility on the Department of Agriculture for the food program.

Karl Brandt, Economist, Food Research Institute, is serving as a consultant of the War Department. On loan from that department he spent several weeks last winter with the Office of Foreign Relief and Rehabilitation.

Roger F. Burdette has resigned his position as Assistant Agricultural

Economist of the University of Maryland Agricultural Experiment Station to accept the position of Agricultural Economist and the Food Distribution Administration of the United States Department of Agriculture.

John M. Chandler has transferred from the Regional Office of the Division of Farm Management and Costs, Bureau of Agricultural Economics, at Upper Darby, Pennsylvania, to the Office of Price Administration, with headquarters in Washington, D. C.

F. D. Cornell, Jr., is Acting Head of the Department of Agricultural Economics at West Virginia University in the absence of W. W. Armentrout.

Joseph Cowden has temporarily left Iowa State College to take a position in the Diary Division of Food Distribution Administration.

John H. Davis, formerly associated with the Cooperative Research and Service Division of the Farm Credit Administration, has accepted a position as Senior Procedure Officer with the Grain Division of the Commodity Credit Administration, Washington, D. C.

James C. Downing, Division of Farm Management and Costs, Bureau of Agricultural Economics, has been transferred from Atlanta, Georgia, to Washington, D. C., and will devote his time to problems of the Appalachian Region.

W. M. Drummond, for some years head of the Department of Agricultural Economics at Ontario Agricultural College, has resigned to accept a position with the Wartime Prices and Trade Board as Special Agricultural Representative of the Board in Washington.

Eric Englund, former Assistant Chief of the Bureau of Agricultural Economics, is now Head of the International Food Distribution Branch, Combined Food Board.

Virgil B. Fielder, formerly in charge of Land Use Planning in Illinois has accepted a position in the Department of Agricultural Economics at the University of Idaho.

Earl R. Franklin recently has joined the staff of Oregon State College, having resigned his position as Assistant Agricultural Economist in the Berkeley, California, office of the Division of Farm Management and Costs, Bureau of Agricultural Economics.

Roman S. Gorski has accepted the position of Economic Analyst with the United States Commercial Company, Washington, D. C., which is a subsidiary of the Reconstruction Finance Corporation.

H. G. Hamilton was granted a temporary leave of absence to accept a position as Senior Agricultural Economist with the Food Distribution Administration effective February 1, 1943.

W. J. Hansen, Instructor in the Department of Agricultural Economics, has been granted a leave of absence for six months to work with the Economic Analysis Section of the Food Price Division with the rank of Associate Economist.

L. S. Hardin came to Purdue University from Cornell University, February 1 to become assistant director of the farm simplification project being done under a financial grant from the General Education Board. Dr. Hardin is a native of Indiana, graduate of Purdue University, and completed his doctorate at Cornell University January, 1943.

H. R. Hare, Senior Assistant Economist, Department of Agriculture at Ottawa, is on loan to the Department of Labour, Division of National Selective Service, to assist with the development and administration of a program having to do with farm labor.

G. V. Haythorne, Secretary of the Nova Scotia Economic Council has obtained leave of absence from his position and is working with the Canadian Department of Labour, National Selective Service, in connection with the Farm Labour Program.

Reuben W. Hecht, Agricultural Economist, has transferred from the Regional Office of the Bureau of Agricultural Economics at Lincoln, Nebraska, to Washington D. C., and will work on labor data in the Division of Farm Management and Costs.

P. A. Henderson resigned March 15 as Farm Management extension economist, Purdue University, in order to assume the active management of an 880 acre grain and livestock farm in Nebraska, his home state.

C. R. Hoglund was appointed Assistant Professor in charge of farm management work in the Agricultural Economics Department of South Dakota State College in January. Professor Hoglund was previously employed as Cooperative Agent with the Agricultural Economics Division of the University of Wisconsin and the Economic Research Section of the Soil Conservation Service, before coming here.

John A. Hopkins has returned to Iowa State College after participating for nine months in an investigation of the problem of adapting Argentine industry to war conditions.

Herman B. James, recently Farm Management Specialist, North Carolina Agricultural Extension Service at Raleigh, North Carolina, has accepted appointment with the Division of Farm Mahagement and Costs, Bureau of Agricultural Economics, assigned to the Atlanta, Georgia, Regional Office.

S. O. Keesler, extension economist in Farm Management, Purdue University, resigned March 15 to become a manager of a central Indiana livestock farm.

William Kling has joined the statistical section of Food Distribution Administration after nearly 3 years with the Division of Farm Management and Costs, Bureau of Agricultural Economics, at Washington, D. C.

E. Lee Langsford, recently in charge of farm management research at the Little Rock, Arkansas, office of Division of Farm Management and Costs, Bureau of Agricultural Economics, has accepted a position with the Food Distribution Administration at Dallas.

J. Karl Lee, Agricultural Economist, Division of Farm Management and Costs, Bureau of Agricultural Economics, is now assigned to the office at Berkeley, California.

David L. MacFarlane, a Canadian who has until recently been on the staff of the Department of Farm Economics, University of Kentucky, has returned to Canada to accept an appointment as Economic Advisor with the Wartime Prices and Trade Board.

Charles C. Mantle, formerly of Iowa State College, has joined the staff of the University of Tennessee as Assistant Agricultural Economist.

Gerald J. Matchett, Agricultural Economist, formerly with the Bureau of Agricultural Economics, Division of Marketing and Transportation Research, is now Chief of the Review Section of the War Labor Board, Denver, Colorado.

H. R. Moore has returned to the Department of Rural Economics and Rural Sociology, Ohio State University, after an absence during which he served as farm management specialist with the Farm Security Administration.

George Montgomery, Professor of Agricultural Economics at Kansas State College, has been loaned to the Office of Price Administration to serve as chief of the Grain and Feed Section.

Troy Mullins has been appointed Agricultural Economist, Division of Farm Management and Costs, Bureau of Agricultural Economics, assigned to the office at Little Rock, Arkansas.

W. I. Myers of Cornell, and O. B. Jessness of Minnesota, are members of the Committee on Post-War Planning of the Commerce and Industry Association of New York.

Aaron G. Nelson, recently Assistant Professor and Assistant Economist at South Dakota State College, has joined the staff of the Division of Farm Management and Costs, Bureau of Agricultural Economics, at Washington D. C., as Agricultural Economist.

Samuel A. Nolan has left the Division of Farm Management and Costs, Bureau of Agricultural Economics, for a position with North American Aircraft, Inglewood, California.

Alvan D. Oderkirk has returned to Iowa State College after several months in charge of the Poultry and Eggs Section of the Office of Price Administration in Washington.

Alden E. Orr, Assistant Agricultural Economist at the State College of Washington, has resigned to become Farm Supervisor of Public Institutions in the State of Washington with headquarters at Olympia.

Arthur W. Peterson has joined the staff of the Department of Farm Management and Agricultural Economics, State College of Washington, as Associate Agricultural Economist. Dr. Peterson formerly was on the staff of the University of Nebraska.

G. L. Peterson, formerly an Assistant Professor in the Department of Agricultural Economics at the University of Connecticut, has resigned to become a member of the staff of the Division of Agricultural Finance, Bureau of Agricultural Economics. Dr. Peterson's rank in the Division is that of Economist.

Roy C. Potts, who will have rounded out 28 years in the service of the United States Department of Agriculture the latter part of May, spent his last day on active duty on March 6. He is now on leave of absence until his retirement becomes effective. Mr. Potts came to the Department from Oklahoma A. & M. College in 1915, where he had been in charge of the Dairy Department. He organized the marketing work on dairy and poultry products in the then Bureau of Markets, including the grading and market news services. An outstanding accomplishment in connection with the grading work was the development of a plan whereby the specific grade of eggs and poultry was carried through to consumers by means of a certificate of quality and grade seals on the individual retail package.

Waldo G. Rowan, Assistant Agricultural Economist, who has been in the Army Air Corps, has rejoined the staff at University of Tennessee.

Woodrow W. Rufener, who for the past five years has been assistant in Agricultural Economics at the State College of Washington, is now Agricultural Economist in the Division of Statistical and Historical Research, Bureau of Agricultural Economics, Washington, D. C.

Leonard A. Salter, Jr., Department of Agricultural Economics, University of Wisconsin, who has been continuing graduate work at the University of Minnesota this past year, will resume his duties at Madison in June.

Marvin Schaars, Associate Professor of Agricultural Economics, University of Wisconsin, has been granted a part-time leave of absence to work with the Agricultural Classification Section of the Wisconsin State Selective Service.

Orlin J. Scoville, Senior Agricultural Economist, Division of Farm Management and Costs, Bureau of Agricultural Economics, has transferred

to Washington, D. C., where he has assumed leadership of the Division's project on low-income farming problems.

Harry G. Sitler, Assistant Agricultural Economist, Division of Farm Management and Costs, Bureau of Agricultural Economics, is now at the office at Lincoln, Nebraska.

Julian L. Smith, formerly employed by Southern States Cooperative, has accepted a position as Associate Economist with the Food Distribution Administration, and been assigned to the regional office in Atlanta, Georgia.

Mildred B. Smith has resigned as Research Assistant in the Department of Agricultural Economics at the University of Connecticut to become an Assistant Economist at the Boston Office of the Office of Price Administration.

Roland V. Snow has transferred from the United States Civil Service Commission where he has been serving as an Examiner in the Economics and Statistics Unit, to the Office of Price Administration where he is now working as a Business Analyst in connection with meat rationing. Some of the studies he is making in this field are concerned with relation of recent population shifts to the distribution of meat supplies and requirements.

L. G. Sorden, former State Bureau of Agricultural Economics representative for Wisconsin, is now Farm Labor Specialist in the Agricultural Extension Service, University of Wisconsin.

Donald J. Street has accepted a position as Assistant Agricultural Economist, Division of Farm Management and Costs, Bureau of Agricultural Economics, at Berkeley, California, having previously worked in the Bureau of Reclamation, Department of the Interior.

Carl F. Taeusch, Head of the Divison of Program Study and Discussion, Bureau of Agricultural Economics, has been designated by the Chief of the Bureau as director of the project for the training of 19 Latin-American Fellows in various fields of agricultural economics. In this project, the Bureau of Agricultural Economics is cooperating with the Department of State, the Office of the Coordinator of Inter-American Affairs, the Office of Foreign Agricultural Relations and other units of the Department of Agriculture.

Clayton V. Taylor is now the principal examiner in charge of the Economics and Statistics Unit of the United Civil Service Commission.

Kenneth Taylor, Head of the Department of Agricultural Economics at McMaster University, and Secretary of the Wartime Prices and Trade Board, was appointed to the position of Foods Administrator for Canada.

Max M. Tharp, Research Assistant in Farm Management in the Kentucky Agricultural Experiment Station, recently joined the Farm Tenancy Division of the Bureau of Agricultural Economics with headquarters at Little Rock, Arkansas.

John D. Thewlis, Research Assistant, Ohio State University, has resigned in order to join the staff of the Office of Price Administration at Columbus, Ohio.

Mr. Robert L. Tontz, recently of the Department of Agricultural Economics, University of Tennessee, has joined the Division of Farm Management and Costs, Bureau of Agricultural Economics, as Assistant Agricultural Economist, at Little Rock, Arkansas.

H. H. Varney, formerly Extension Marketing Economist in the Department of Rural Economics and Rural Sociology, Ohio State University, has joined the Office of Price Administration in Cleveland as Regional Economist.

W. C. Waite, Professor of Agricultural Economics, University of Minnesota, has been given a leave of absence until July 1, 1943, to work with the Food Distribution Administration, United States Department of Agriculture.

Paul P. Wallrabenstein, formerly an assistant in the Department of Rural Economics and Rural Sociology, Ohio State University, is now Assistant Agricultural Statistician, Crop Reporting Service, Charleston, West Virginia.

Raymond S. Washburn has transferred to Food Production Administration as Agricultural Economist.

W. W. Wilcox of Iowa State College has been on leave in Washington since the first of the year as secretary of a U.S.D.A. inter-agency committee on food requirements and as Associate Chief of the Allocation Branch of the Food Distribution Administration.

Burton Wood is on leave from the St. Paul Regional Office of the Farm Credit Administration to assist the Dairy and Poultry Division of the Food Distribution Agency in the allocation of dairy plant equipment and the handling of surplus milk in Wisconsin.

Holbrook Working, Economist, Food Research Institute, has taken part in the planning and conduct of several courses, arranged by Stanford University on the Pacific Coast, under the Engineering, Science, and Management War Training program, to facilitate the use of statistical methods of quality control by war industries and procurement agencies of the armed forces. He has also served as statistical consultant to the Fourth Air Force.

R. M. Williams, Assistant Rural Sociologist, University of Kentucky, has accepted a position with the Division of Special Services with the War Department, Washington, D. C.

E. C. Young of Purdue University has assumed the direction of a national research project on farm work simplification. This research is being done in approximately 12 land-grant experiment stations and in cooperation with the United States Department of Agriculture. Dean Young is on half-time leave from Purdue University to direct this work.

HONOR ROLL

Birkhead, James W.	Bur. Agri. Econ., USDA	Navy
Blosser, Robert H.	Ohio State University	Army
Brown, L. M.	South Dakota State College	Army
Campbell, J. Wiley	Ohio State University	Army
Clarke, James H.	West Virginia University	Army
Coons, A. E.	South Dakota State College	Army
Gabel, Richard	Bur. Agri. Econ., USDA	Army
Glasgow, Robert B.	Bur. Agri. Econ., USDA	Navy
Halvorson, Harlow W.	University of Minnesota	Army
Hamilton, Robert B.	Ohio State University	Army
Hedges, Trimble R.	University of Arkansas	Navy
Henry, William F.	University of Connecticut	Navy
Kendall, J. R.	Ohio State University	Navy
Kinney, R. R.	Ohio State University	Army
Korzan, Gerald	South Dakota State College	Army
Lindgard, Harold T.	Bur. Agri. Econ., USDA	Army
Little, Herschel W.	Bur. Agri. Econ., USDA	Navy
Marcy, Orrin J.	University of Maine	Army
Marshall, Don A.	University of Arkansas	Navy
Marx, Robert E.	Bur. Agri. Econ., USDA	Army
McQuerter, Loryn E.	University of Missouri	Army
Mehren, George L.	University of California	Navy
Miller, Kenneth W.	Bur. Agri. Econ., USDA	Navy
Mimms, Otho L.	Bur. Agri. Econ., USDA	Army
Patton, Harald Smith	Michigan State College	Army
Poling, Earl B.	Ohio State University	Army
Quackenbush, G. C.	Purdue University	Army
Scott, Forrest E.	Bur. Agri. Econ., USDA	Army
Swartz, Donald M.	Ohio State University	Army
Tetro, Robert C.	Bur. Agri. Econ., USDA	Navy